DOCUMENT RESUME

ED 436 707 CG 029 705

AUTHOR	Ragin, Ann; Rasinski, Kenneth A.; Cerbone, Felicia Gray; Johnson, Robert A.
TITLE	The Relationship between Mental Health and Substance Abuse among Adolescents. Analytic Series: A-9.
INSTITUTION	Substance Abuse and Mental Health Services Administration (DHHS/PHS), Rockville, MD. Office of Applied Studies.
SPONS AGENCY	National Opinion Research Center, New York, NY.
REPORT NO	SMA-99-3286
PUB DATE	1999-04-00
NOTE	130p.
CONTRACT	283-95-0002
AVAILABLE FROM	National Clearinghouse for Alcohol and Drug Information, P.O. Box 2345, Rockville, MD 20847-2345; Tel: 301-468-2600; Tel: 800-729-6686 (Toll Free); Tel: 800-487-4889 (TDD); Web site: <http://www.samhsa.org>, Web site: <http://www.health.org>.
PUB TYPE	Numerical/Quantitative Data (110) -- Reports - Research (143) -- Tests/Questionnaires (160)
EDRS PRICE	MF01/PC06 Plus Postage.
DESCRIPTORS	*Adolescents; Anxiety; Behavior Problems; Depression (Psychology); Emotional Problems; *Mental Health; *Psychological Evaluation; *Research Reports; Secondary Education; *Substance Abuse; Tables (Data)
IDENTIFIERS	*National Household Survey on Drug Abuse

ABSTRACT

This report presents an examination of the association between psychological functioning and substance abuse among adolescents aged 12 to 17 using data from the 1994-1996 National Household Survey on Drug Abuse (NHSDA). The survey, conducted annually by Substance Abuse and Mental Services Administration (SAMHSA), provides estimates of the prevalence of use of a variety of illicit drugs, alcohol, and tobacco, based on a nationally representative sample of the civilian non-institutionalized population. In 1994, the NHSDA added the Youth Self-Report, a comprehensive mental health checklist that has been used extensively in studies of adolescents. The instrument generates summary measures of emotional and behavioral problems, as well as measures for specific syndromes. Selected and highlighted findings of the study include: an estimated 13 percent of adolescents had emotional problems as indicated by withdrawal, somatic problems, anxiety, and depression; an estimated 17 percent had behavioral problems indicated by delinquent or aggressive behavior; and the likelihood of substance use is associated with the severity of emotional and behavioral problems across age and gender groups. Specific study results are categorized into sections on illicit drug use, alcohol use, cigarette use, alcohol or illicit drug dependence, and using the Youth Self-Report to identify substance users. (Contains 86 references and 46 tables. Appendices include standard error tables, data and methods, and NHSDA questionnaire items used. (GCP)

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Acknowledgments

This publication was developed for the Substance Abuse and Mental Health Services Administration, Office of Applied Studies (OAS), by the National Opinion Research Center (NORC), under Contract No. 283-95-0002. Dean R. Gerstein was the principal investigator and Janet Greenblatt was the OAS project officer. The report was written by Ann Ragin, Kenneth A. Rasinski, Felicia Gray Cerbone, and Robert A. Johnson, all of NORC. The authors appreciate the guidance provided by the following reviewers: Dean R. Gerstein, NORC; Janet Greenblatt, Office of Applied Studies, SAMHSA; Suzanne Erfurth, NORC; Joseph Gfroerer, Office of Applied Studies, SAMHSA; Joan Epstein, Office of Applied Studies, SAMHSA; and John P. Hoffmann, NORC.

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Electronic Access to Publication

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World Wide Web Internet Connections:
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Originating Office:
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April 1999

Table of Contents

List of Tables and Figures v

Highlights 1

Chapter 1: Introduction 5
1.1 NHSDA 5
1.2 Purposes of this Report 6
1.3 Literature Review 6
1.4 Overview of Chapter Contents 10

Chapter 2: Data and Methods 12
2.1 Measurement of Substance Use, Dependence, and Need for Treatment 12
2.2 Adolescent Emotional/Behavioral Problems 15
2.3 Statistical Methods 17

Chapter 3: Psychological Functioning and Adolescent Substance Use 19
3.1 Introduction 19
3.2 Substance Use Among Adolescents 19
3.3 Cigarette Smoking Among Adolescents 19
3.4 Alcohol Use Among Adolescents 20
3.5 Use of Marijuana and Other Illicit Drugs Among Adolescents 20
3.6 Psychological Functioning Among Adolescents 21
3.7 Psychological Factors and Substance Use Among Adolescents 23
3.8 Psychological Factors and Cigarette Smoking 24
3.8.1 Emotional Problems and Cigarette Smoking 24
3.8.2 Behavioral Problems and Cigarette Smoking 24
3.9 Psychological Factors and Alcohol Use 25
3.9.1 Emotional Problems and Alcohol Use 25
3.9.2 Emotional Problems and Alcohol Dependence 26
3.9.3 Behavioral Problems and Alcohol Use 26
3.9.4 Behavioral Problems and Alcohol Dependence 27
3.10 Psychological Factors and Marijuana Use 27
3.10.1 Emotional Problems and Marijuana Use 27
3.10.2 Behavioral Problems and Marijuana Use 28
3.11 Psychological Factors and Use of Illicit Drugs Other Than Marijuana 28
3.11.1 Emotional Problems and Use of Illicit Drugs Other Than Marijuana 28
3.11.2 Emotional Problems and Dependence on Illicit Drugs 29
3.11.3 Emotional Problems and Need for Illicit Drug Treatment 29
3.11.4 Behavioral Problems and Use of Illicit Drugs Other Than Marijuana 30
3.11.5 Behavioral Problems and Dependence on Illicit Drugs 30
3.11.6 Behavioral Problems and Need for Illicit Drug Treatment 31

Table of Contents (continued)

3.12 Alcohol or Illicit Drug Dependence 31
3.12.1 Emotional Problems and Alcohol or Illicit Drug Dependence 31
3.12.2 Behavioral Problems and Alcohol or Illicit Drug Dependence 31
3.13 Conclusions 32

Chapter 4: Methodological Considerations in Using the Youth Self-Report (YSR) to Identify Substance Users 47
4.1 Introduction 47
4.2 The YSR 47
4.3 Descriptive Results 48
4.4 Relationships Among Syndromes 49
4.5 Relationship of Syndromes to Substance Use 50
4.6 Conclusions 53

References 69

Appendices

Appendix A: Standard Error Tables A-1

Appendix B: Data and Methods B-1

Appendix C: NHSDA Questionnaire Items Used C-1

List of Tables and Figures

Table/Figure		Page
Figure 2-1	Approximate Correspondences between DSM and Youth Self-Report Classifications	16
Table 2.1	Number of Respondents (Unweighted Ns), by Age Group and Gender: 1994-1996 Combined NHSDAs	18
Table 2.2	Estimated Number of People (in Thousands) in the U.S. Civilian Non-institutionalized Population (Weighted Ns), by Age Group and Gender: 1994-1996 Combined NHSDAs	18
Table 2.3	Estimated Percentage of the U.S. Civilian, Non-institutionalized Population, by Age Group and Gender: 1994-1996 Combined NHSDAs	18
Figure 3-1	Syndrome and Problem Scales of the Youth Self-Report	22
Table 3.1	Percent Using Drugs and Alcohol, by Gender and Age (12-13, 14-15, 16-17), 1994-1996	34
Table 3.2	Percentages of Adolescents with Emotional and Behavioral Problems, by Gender and Age (12-13, 14-15, 16-17), 1994-1996	35
Table 3.3	Percentage of Adolescents Aged 12 to 17 Using Cigarettes in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996	36
Table 3.3a	Percentage of Adolescents Aged 12 to 17 Using Cigarettes Daily or Almost Daily in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996	37
Table 3.4	Percentage of Adolescents Aged 12 to 17 Using Alcohol in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996	38
Table 3.4a	Percentage of Adolescents Aged 12 to 17 Binge Drinking in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996	39
Table 3.4b	Percentage of Adolescents Aged 12 to 17 Drunk Three or More Times in the Past Year, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996	40

List of Tables and Figures (continued)

Table 3.4c — Percentage of Adolescents Aged 12 to 17 Dependent on Alcohol, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 41

Table 3.5 — Percentage of Adolescents Aged 12 to 17 Using Marijuana in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 42

Table 3.6 — Percentage of Adolescents Aged 12 to 17 Using Illicit Drugs Other Than Marijuana in the Past Month, by Emotional and Behavioral\ Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 43

Table 3.6a — Percentage of Adolescents Aged 12 to 17 Dependent on Illicit Drugs, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 44

Table 3.6b — Percentage of Adolescents Aged 12 to 17 in Need of Illicit Drug Abuse Treatment, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 45

Table 3.7 — Percentage of Adolescents Aged 12 to 17 Dependent on Alcohol or Illicit Drugs, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 46

Table 4.1 — Means and Standard Errors for the YSR Syndromes, by Age Group and Gender, NHSDA National Sample and Achenbach (1991) Nonclinical Sample 55

Table 4.2 — Interitem Consistency Coefficients (Alpha) for YSR Syndromes by Gender 56

Table 4.3 — Correlations Among the YSR Scales for the Entire NHSDA Sample 56

Table 4.4 — Correlations Among the YSR Scales for 13- to 14-Year-Old Males (Upper Diagonal) and Females (Lower Diagonal) 57

Table 4.5 — Correlations Among the YSR Scales for 14- to 15-Year-Old Males (Upper Diagonal) and Females (Lower Diagonal) 58

List of Tables and Figures (continued)

Table 4.6 Correlations Among the YSR Scales for 16- to 17-Year-Old Males (Upper Diagonal) and Females (Lower Diagonal) 59

Table 4.7 Mean and Median Correlations Among the Syndrome Scales by Age and Gender 59

Table 4.8 Results for Logistic Regression of YSR Scales on Any Past Month Cigarette Smoking, Overall and by Age Group and Gender 60

Table 4.9 Results for Logistic Regression of YSR Scales on Any Past Month Alcohol Use, Overall and by Age Group and Gender 61

Table 4.10 Results for Logistic Regression of YSR Scales on Any Past Month Marijuana Use, for the Entire Sample and by Age Group and Gender 62

Table 4.11 Results for Logistic Regression of YSR Scales on Alcohol Dependency Indicator, for the Entire Sample and by Age Group and Gender 63

Table 4.12 Results for Logistic Regression of YSR Scales on Drug Dependency Indicator, for the Entire Sample and by Age Group and Gender 64

Table 4.13 Results for Logistic Regression of YSR Scales on Substance Dependency Indicator, for the Entire Sample and by Age Group and Gender 65

Table 4.14 Results for Logistic Regression of YSR Scales on Need for Illicit Abuse Treatment Indicator, for the Entire Sample and by Age Group and Gender 66

Table 4.15 YSR Items from Three Syndromes that Significantly Predict Substance Use 67

Table A3.1 Standard Errors for Percent Using Drugs and Alcohol, by Gender and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-3

Table A3.2 Standard Errors for Percentages of Adolescents with Emotional and Behavioral Problems, by Gender and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-4

List of Tables and Figures (continued)

Table A3.3 Standard Errors of the Percentages of Adolescents Aged 12 to 17 Using Cigarettes in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-5

Table A3.3a Standard Errors of the Percentages of Adolescents Aged 12 to 17 Using Cigarettes Daily or Almost Daily in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-6

Table A3.4 Standard Errors of the Percentages of Adolescents Aged 12 to 17 Using Alcohol in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-7

Table A3.4a Standard Errors of the Percentages of Adolescents Aged 12 to 17 Binge Drinking in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-8

Table A3.4b Standard Errors of the Percentages of Adolescents Aged 12 to 17 Drunk Three or More Times in the Past Year, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-9

Table A3.4c Standard Errors of the Percentages of Adolescents Aged 12 to 17 Dependent on Alcohol, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-10

Table A3.5 Standard Errors of the Percentages of Adolescents Aged 12 to 17 Using Marijuana in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-11

Table A3.6 Standard Errors of the Percentages of Adolescents Aged 12 to 17 Using Illicit Drugs Other Than Marijuana in the Past Month, by Emotional and behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-12

Table A3.6a Standard Errors of the Percentages of Adolescents Aged 12 to 17 Dependent on Illicit Drugs, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-13

List of Tables and Figures (continued)

Table A3.6b Standard Errors of the Percentages of Adolescents Aged 12 to 17 in Need of Illicit Drug Abuse Treatment, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-14

Table A3.7 Standard Errors of the Percentages of Adolescents Aged 12 to 17 Dependent on Alcohol or Illicit Drugs, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996 ..... A-15

Highlights

This report presents an examination of the association between psychological functioning and substance use among adolescents aged 12 to 17 using data from the 1994-1996 National Household Survey on Drug Abuse (NHSDA). The survey, conducted annually by Substance Abuse and Mental Health Services Administration (SAMHSA), provides estimates of the prevalence of use of a variety of illicit drugs, alcohol, and tobacco, based on a nationally representative sample of the civilian noninstitutionalized population. In addition, the 1994-1996 surveys include mental health data not previously available. In 1994, the NHSDA added the Youth Self-Report (YSR) (Achenbach, 1991), a comprehensive mental health checklist that has been used extensively in studies of adolescents. The instrument generates summary measures of emotional and behavioral problems, as well as measures for specific syndromes, including depression, anxiety, withdrawal, somatic complaints, social problems, thought problems, attention problems, delinquent behavior, and aggressive behavior. Selected findings are given below.

Emotional and Behavioral Problems

- In 1994-1996, an estimated thirteen percent of adolescents aged 12 to 17 had emotional problems as indicated by withdrawal, somatic problems, anxiety and depression.

- In 1994-1996, an estimated seventeen percent of adolescents aged 12 to 17 had behavioral problems indicated by delinquent or aggressive behavior.

- The likelihood of substance use among adolescents is associated with the severity of emotional and behavioral problems across age and gender groups.

Illicit Drug Use

- In 1994-1996, nine percent of adolescents aged 12 to 17 reported past month use of illicit drugs. Seven percent reported past-month use of marijuana. Four percent of

adolescents aged 12 to 17 reported past-month use of illicit drugs other than marijuana. Rates of illicit drug use were highest among older adolescents aged 16 to 17; 17 percent of males and 13 percent of females reported past-month use.

- Past-month marijuana use was nearly twice as likely and use of other illicit drugs was four times more likely for adolescents with serious emotional problems than for adolescents with low levels of emotional problems.

- Past-month marijuana use was four times as likely and use of other illicit drugs was nearly seven times more likely for adolescents with serious behavioral problems than for adolescents with low levels of behavioral problems. Dependence on substances such as cocaine, crack, inhalants, hallucinogens, heroin or abused prescription drugs was nearly nine times as likely among adolescents with serious behavioral problems.

Alcohol Use

- In 1994-1996, 20 percent of adolescents aged 12 to 17 reported using alcohol in the past month. Rates of past-month alcohol use were highest among older adolescents aged 16 to 17; 36 percent of males and 31 percent of females reported past month use.

- Past-month alcohol use was nearly twice as likely for adolescents with serious emotional problems than for adolescents with low levels of emotional problems.

- Adolescents with serious behavioral problems were nearly three times as likely to use alcohol in the past month than adolescents with low levels of behavioral problems.

Cigarette Use

- In 1994-1996, 19 percent of adolescents 12 to 17 reported smoking cigarettes in the past month. Rates were highest among older adolescents aged 16 to 17; 31 percent of males and 27 percent of females reported past month cigarette smoking.

- When compared to adolescents with low levels of emotional problems, past-month cigarette smoking was twice as likely for adolescents with serious emotional problems.

- Past-month smoking was three times more likely for adolescents with serious behavioral problems than for adolescents with low levels of behavioral problems.

Alcohol or Illicit Drug Dependence

- In 1994-1996, 6 percent of adolescents aged 12 to 17 reported dependence on alcohol or illicit drugs. Rates were highest among older adolescents; approximately 10 to 11 percent of adolescents aged 16 to 17 reported alcohol or illicit drug dependence.

- Adolescents with serious emotional problems were nearly four times more likely to be dependent on alcohol or illicit drugs than adolescents with low levels of emotional problems.

- Alcohol or illicit drug dependence was more than seven times more likely among adolescents with serious behavioral problems than among adolescents with low levels of behavioral problems.

Using the Youth Self-Report (YSR) to Identify Substance Users

- Average scores on the YSR syndromes for the NHSDA adolescents were generally consistent with the nonclinical norming sample reported by Achenbach (1991). Overall, there were higher correlations among scales in the NHSDA than in the norming sample.

- When all of the syndromes are considered together in the analysis, the syndrome most consistently associated with substance use is Delinquent Behavior, even though the substance abuse items in the YSR were removed from the syndrome scale. This is followed by scales measuring Social Problems and Attention Problems. Here, more

Attention Problems but fewer Social Problems were associated with increased substance use (see pp. 42-43).

- Stealing, swearing, hanging around with troublemakers, and running away from home (from the Delinquent Behaviors scale) were associated with higher levels of substance use. "Feeling confused or in a fog" from the Attention Problems scale, was also associated with more substance use.

- Adolescents who used substances were *less* likely to acknowledge getting teased, preferring younger friends, acting too young, or being overdependent on adults (from the Social Problems scale).

Chapter 1: Introduction

1.1 NHSDA

The NHSDA is the principal source of information concerning substance use in the United States. It is used to estimate prevalence, to monitor trends in drug use over time, and to evaluate factors associated with drug use. Public use data sets are currently available for 1979, 1982, 1985, 1988, and yearly for 1990 through 1996. Since 1992 the survey has been conducted by the Office of Applied Studies (OAS) within the SAMHSA.

The NHSDA is a cross-sectional survey designed to represent the non-institutionalized population of the U.S. aged 12 and older. During 1994 to 1996, the NHSDA has interviewed approximately 18,000 respondents per year. Questionnaires are administered to respondents at their place of residence. The target population represents residents of households, those living in non-institutional group quarters (e.g., shelters, rooming houses, dormitories), and civilians living on military bases. Persons not represented include those homeless who never use shelters, active military personnel, and residents of institutions (e.g., jails, hospitals). The target population is estimated to represent more than 98 percent of the total U.S. population aged 12 and older.

This report examines results from the combined 1994-B[1], 1995, and 1996 NHSDA data files. Specific information is available for the use of alcohol, tobacco, and illicit drugs. In addition, this time period includes mental health information that has never been available in prior surveys. In 1994, the NHSDA added the YSR, a checklist developed by Achenbach (1991) that has been used extensively in studies of adolescents. This instrument provides

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[1]In 1994, as part of a split-sample, two separate versions of the NHSDA questionnaire were administered (1994-A and 1994-B). For 1994-A, 4,372 respondents were interviewed using the 1993 questionnaire. Thus, 1994-A is comparable to the 1991-1993 NHSDA. For 1994-B, changes were implemented to improve the measurement of trends, reduce data processing time, and enrich the overall quality of the data. The revised questionnaire was used with 17,809 respondents. The editing procedures for measuring rates of use for each drug were also revised. Therefore, the 1994-B and subsequent data are not comparable with data from prior years. For more details, see *Advance Report Number 18: Preliminary Estimates from the 1995 National Household Survey on Drug Abuse* (SAMHSA, 1996) and *Development and Implementation of a New Data Collection Instrument for the 1994 National Household Survey on Drug Abuse* (SAMHSA, 1996b). The questionnaires and editing procedures for the 1995 and 1996 NHSDAs are similar to those of the 1994-B NHSDA.

comprehensive assessment of psychological difficulties during the adolescent period.[2] The instrument makes it possible to generate a global score for overall psychosocial distress, as well as summary measures of behavioral and emotional disorders, and specific measures of depression, anxiety, withdrawal, somatic complaints, social problems, thought problems, attention problems, delinquency, and aggressive behavior.

1.2 Purposes of this Report

This report examines the relationship between psychological functioning and substance use among adolescents. Both mental disorders and substance use frequently have their onset in adolescence. Therefore, examination of this developmental period may shed light on the relationship between mental disorders and substance use. Because the combined NHSDAs for 1994-B, 1995, and 1996 include detailed measures of psychosocial functioning and substance use, the NHSDA data can be used to examine the prevalence of specific patterns of emotional and behavioral problems and substance use among early (12 to 13), middle (14 to 15), and late (16 to 17) adolescents. Specifically, the report examines the association between substance use and measures of emotional and behavioral problems within groups defined by age and gender. It establishes rates of emotional and behavioral problems in the non-institutionalized adolescent population of the United States (see Chapter 3) and determines whether specific measures of psychological functioning are associated with substance use (see Chapter 4). The report also specifies a subset of items from the YSR that can be used to identify adolescents at high risk for substance abuse.

1.3 Literature Review

A growing body of evidence indicates that the comorbidity of mental disorders and substance use is far more extensive than was previously assumed. The National Institute of Mental Health Epidemiological Catchment Area Program (ECA) evaluation of comorbidity in a general population sample aged 18 and older found that any past history of mental disorder was associated with more than twice the risk of having an alcohol disorder, and over four times the

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[2]Achenbach, T.M., *Manual for the Youth Self-Report and 1991 Profile*. Burlington, VT: University of Vermont Department of Psychiatry (1991).

risk of having another drug disorder (Regier et al., 1990). The National Comorbidity Survey (NCS) found that mood, anxiety, antisocial personality disorder, and substance use disorders were highly comorbid in a general population sample aged 15 to 54 (Kessler et al., 1994). The lifetime co-occurrence of mental disorders with addictive disorders was estimated to be approximately 50 percent (Kessler et al., 1996). The mental disorder preceded the addictive disorder in 83.5 percent of co-occurrences, developing most frequently during adolescence.

Research and theory concerned with substance use and with mental disorders are guided by the common assumption that an underlying predisposition interacts with psychosocial risk factors to determine the expression of disorder. Overall risk may be influenced by biological, psychological, and sociocultural factors. While risk factors have been identified for both mental disorders and substance use among adolescents, the extent of association has not been established. Failure to consider the association may have serious consequences to the interpretation of findings concerned with adolescent psychopathology. Substance use associated with emotional or behavioral problems may evidence different developmental history, more severe functional impairment, and poorer prognosis. If the co-occurrence is not taken into consideration, the presence of an unmeasured condition may confound findings concerning etiology, course, treatment, transmission, and classification for either mental illness or substance abuse (Angold et al., 1993).

The prevalence of co-occurring emotional and behavioral problems and addictive disorders across the period of adolescence has not been clearly established. Because restricted samples for this age range were surveyed, and adolescent-specific psychiatric disorders were not considered, the conclusions of the ECA and the NCS concerning adolescence are limited. Estimates of co-occurring mental disorders and substance use problems among adolescents range from 22 to 82 percent (Boyle & Offord, 1991; Cohen et al., 1993; Brown, Mott & Stewart, 1992; Eisen, Youngman, Grob & Dill, 1992; Caton et al., 1989; Greenbaum et al., 1991; Groves, Batey & Wright, 1986; Lewinsohn, Rohde & Seeley, 1995; Roehrich & Gold, 1986; Rohde, Lewinsohn & Seeley, 1991; Stowell & Estroff, 1992). Inconsistent assessment of both substance use and mental disorders, and other methodological differences, make it difficult to generalize or compare findings, and have resulted in conflicting prevalence estimates.

A striking pattern of association among adolescents was detailed in a SAMHSA report based on the 1994 NHSDA. This report focused on psychosocial difficulty and specific substance use among non-institutionalized adolescents aged 12 to 17 (SAMHSA, 1996c). Psychosocial problems for the prior six months were assessed with the YSR. Measures of psychosocial problems were found to be highly associated with substance use among adolescents. Past-month cigarette smoking and binge drinking (five or more drinks on the same occasion) were associated with high ratings for psychosocial problems in the past six months. For marijuana use, the relationship was more pronounced. While overall substance use is generally higher for adolescent males than for females, females with high ratings for psychosocial problems as measured by the YSR[3] were as likely as males to smoke cigarettes, binge drink, or use illicit drugs.

Many studies concerned with adolescent psychopathology have found evidence of a relationship between emotional or behavioral problems and substance use. Hyperactivity in childhood (Hechtman, Weiss & Perlman, 1984) and antisocial behavior (e.g., Jones, 1968; Cadoret et al., 1986) have been associated with vulnerability to substance use. Tobacco use is most pronounced among high school students with behavioral problems (Sussman et al., 1990). In a longitudinal study that spanned early childhood through late adolescence (age 18), Shedler and Block (1990) found that at very early ages signs of emotional disturbance distinguished those who were to become heavy marijuana users. At age seven these children were characterized as not getting along with others, unconcerned with fairness, indecisive, untrustworthy, unreliable, unable to admit negative feelings, lacking confidence and self-esteem, and demonstrating physical signs of stress. At age 11, those who were to become heavy marijuana users were distinguished by characteristics such as emotional instability, inattentiveness, inability to concentrate, lack of involvement in activities, and stubbornness.

Theories concerned with the relationship of substance use and mental disorders have emphasized the interaction between the symptoms of the mental disorder and the mood-altering characteristics of specific substances. It has been proposed that substance use is an attempt to self-medicate for difficult feeling states such as depression and anxiety (Khantzian, 1985).

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[3]"Psychosocial problems" is the sum of the responses to all items on Achenbach's Youth Self-Report.

Within this view, the mood-altering characteristics of the substance of choice would likely correspond to the symptoms associated with particular mental disorders. A related view is that substance use is the result of the disinhibiting influence of psychological factors such as impulsivity or impaired judgment. Adolescence is a difficult developmental period that may precipitate the onset of emotional problems or substance use (Erikson, 1950). Self-medication (Weiss & Mirin, 1987) and using substances to forget unpleasant experiences, or to fulfill a need state that cannot be otherwise gratified (Mainous et al., 1996), have been identified as motivations for adolescent substance use. A number of studies have found that positive expectancies on the part of the potential user (e.g., stress reduction) predict alcohol use (Rather et al., 1992; Sher et al., 1991) or more general substance use (Stacy, Newcomb & Bentler, 1991). Parents who use substances as a coping behavior may foster such expectations.

Parental influence has been found to be of critical importance in studies of risk factors for adolescent substance use. Among significant determinants of adolescent substance use are parental attitudes and behavior, role modeling, parental behavioral management, and the quality and consistency of family communication (Kandel, 1982; Kandel et al., 1978; Donovan & Jessor, 1978). Parental supervision and the perception of parental concern have been found to be associated with reduced likelihood of substance use (Fletcher et al., 1995; Richardson et al., 1989). Peers also influence risk of initiation and progression of substance use (Kandel et al., 1978; Jessor & Jessor, 1978; White, 1987). Personality factors that influence peer group resistance, such as self-efficacy, have been found to be protective against substance use (Stacy et al., 1992). It may be that weak parent-adolescent bonds augment vulnerability to peer pressure. Impaired parent-adolescent attachments may reflect difficulties that date to childhood and escalate to crisis proportions with the developmental challenges and associated turmoil of the adolescent life stage.

Family structure is also associated with differential risks of substance use. Adolescents living with both biological parents are less likely to use alcohol, cigarettes, marijuana, or other illicit substances; family structures consisting of the biological father and the absence of the biological mother are associated with greatest risk (Johnson et al., 1996d). However, the causal mechanisms underlying the risk relation between family structure and substance use are only partially understood (Flewelling & Bauman, 1990; Hoffman, 1993, 1995; Johnson, et al., 1995;

Johnson & Kaplan, 1990; Needle, Su & Doherty, 1990; Newcomb & Bentler, 1986, 1987, 1988; Kandel et al., 1986; Yamaguchi & Kandel, 1985; Kandel, 1984).

Familial influence may involve various risk factors such as genetic influences, parental psychopathology, parental substance use, and the availability of substances. Family background may involve indirect adverse effects such as poor parental support, lack of care and nurturance during childhood, physical or sexual abuse, poor supervision of peer relations, weak coping resources, high stress within the home, and low SES. Determining the relative contribution of risk factors is difficult. Risk factors vary for different disorders and substances. Demographic characteristics such as age and gender influence the expression of various adolescent disorders, as well as the expression of early risk factors for emotional problems (Achenbach et al., 1989; Angold et al., 1991; Angold & Costello, 1993; Block & Gjerde, 1990; Loeber et al., 1992; Werry, 1986; Loeber, 1989; Klein & Mannuzza, 1988; Marks, 1987; Prior et al., 1993). Kandel (1982) has proposed that risk factors are of differential relevance during different phases of progression. Parental and peer influences may be particularly critical in early phases of involvement with substances; in later phases, the influence of peers may increase. Factors such as parental use, troubled family relationships, and emotional or behavioral problems may be most predictive of escalation to more serious substance use.

1.4 Overview of Chapter Contents

Chapter 2 describes the data source for this report, including the survey methods used in the NHSDA. The measurement of adolescent substance use is described and the mental health measures are discussed in greater detail.

Chapter 3 presents national estimates of the association between specific psychological factors and substance use among adolescents. Estimates for specific ages (early, middle, and late adolescence) and for each gender are presented. The implications of prevalence patterns are discussed.

Chapter 4 further examines emotional risk factors for substance use among adolescents within specific age and gender groups. The implications of the findings for theories of emotional vulnerability to substance use and for identification of high-risk adolescents are discussed. Also,

Chapter 4 presents an examination of specific emotional and behavioral problems that are most associated with substance abuse in adolescents of different age groups.

Appendix A presents the standard error tables for the estimates in Chapter 3. Standard errors for the estimates in Chapter 4 are either presented within the tables or are available upon request. Appendix B describes sample weighting, estimation, statistical tests, statistical models, and suppression of estimates due to low precision. The NHSDA questionnaire items used are presented in Appendix C.

Chapter 2: Data and Methods

This report presents an examination of the association between psychological functioning and substance use among adolescents aged 12 to 17 using data from the combined 1994-1996 National Household Survey on Drug Abuse. The SAMHSA survey, conducted annually, provides estimates of the prevalence of use of a variety of illicit drugs, alcohol, and tobacco, based on a nationally representative sample of the civilian noninstitutionalized population age 12 years and older. In addition, the 1994-1996 surveys include mental health data not previously available. A sample of 13,831 adolescents aged 12 to 17 was interviewed. These respondents represent an average annual population of approximately 22 million adolescents residing in the United States.

The NHSDA interview is designed to maximize honest reporting of substance use. Respondents are given the standard confidentiality assurances. Self-administered assessment instruments are used to collect information about substance use and mental health, so that responses are not revealed to the interviewer or to other persons present at the interview. Self-administered questionnaires are particularly useful for enhancing honest reporting of substance use by adolescents (Turner et al., 1992). Mental health was assessed with the YSR, a 118-item self-administered checklist (though a small percentage of adolescents in the combined sample, approximately 5 percent, preferred to have the interviewer administer the YSR). In the combined 1994-1996 data, approximately 50 percent of the adolescent interviews were conducted with only the interviewer and respondent present. The majority (more than 70 percent) of the interviews were free from distractions or interruptions.

The interviews were conditional on parental permission and required approximately one hour to complete. Upon completion, the questionnaire was placed in an envelope, sealed, and mailed back to the data collection contractor. To ensure anonymity, no name, address, or other identifying information was included in the envelope.

2.1 Measurement of Substance Use, Dependence, and Need for Treatment

The NHSDA includes a comprehensive battery of items covering licit and illicit substance use for the past month. Respondents are asked to indicate any use in the past month of: alcohol, cigarettes, marijuana, any illicit drug, and illicit drugs other than marijuana. Illicit drugs

include marijuana, hashish, cocaine (including crack), inhalants, hallucinogens (including PCP and LSD), heroin, and the nonmedical use of a prescription psychotherapeutic.

The following NHSDA questionnaire items, called "recency" items, were used to determine past-month substance use. Respondents who reported that their most recent use of the specified substance occurred within the 30-day period preceding the interview were classified as having used the substance during the past month.

- Alcohol: "Think about the last time you drank any type of alcoholic beverage. How long has it been since you last drank an alcoholic beverage?"
- Cigarettes: "How long has it been since you last smoked a cigarette?"
- Marijuana: "How long has it been since you last used marijuana or hashish?"
- Any illicit drug use or illicit drugs other than marijuana: "How long has it been since you last used [name of drug]?"

In order to evaluate nonmedical use of sedatives, tranquilizers, stimulants, and analgesics, these items included a qualifying statement indicating that the substance was "not prescribed for you, or that you took only for the experience or feeling it caused."

Measures of substance dependence and need for substance abuse treatment were developed to identify patterns of problem substance use. The NHSDA items used to assess dependence are based on diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV–American Psychiatric Association, 1994). Respondents were asked to identify consequences and symptoms diagnostic of dependence for specific substances during the year preceding the interview. These reports were used to define dependence on alcohol and illicit drugs.

It is important to note that questions used to estimate dependence were changed slightly from 1994 to 1995. The questions used to estimate dependence in 1994 were designed to approximate five of the seven DSM-IV criteria, while the questions used to estimate dependence beginning in 1995 were developed to approximate six of the criteria. In 1994, if three of five

DSM-IV dependency criteria were indicated for a specific substance in the past year, respondents were classified as dependent. The 1994 dependence items included the following indicators:

- Built up a tolerance for the drug
- Used the drug more often than intended
- Wanted to cut down but unable to cut down
- Spent a month or more in the past year using or getting over the drug
- Indicated that the drug caused problems

In 1995 and again in 1996 the following six DSM-IV dependency criteria were used; if three of the six criteria were indicated for a specific substance in the past year, a respondent was classified as dependent:

- Built up a tolerance for the drug
- Used the drug more often than intended
- Wanted to cut down or tried, but found could not
- Spent a month or more in the past year getting, using, or getting over the drug
- Drug reduced important activities
- Drug caused emotional problems or health problems

In spite of the slightly different criteria for determining dependency, an investigation of the two measures indicate that they are comparable (Epstein and Gfroerer, 1996).

A measure of the probable need for illicit drug abuse treatment was also constructed following Epstein and Gfroerer (1996). A respondent was classified as in need of illicit drug abuse treatment if any of the following conditions were present in the past year:

- Dependence on any illicit drug
- Injection drug use
- Received treatment for drug use
- Daily use of marijuana
- Any heroin use
- Weekly use of psychotherapeutics, hallucinogens, inhalants, or cocaine

Past-month daily cigarette use was defined as smoking a cigarette on 25 or more of the past 30 days. Past-month "binge" alcohol use was defined as five or more drinks on the same occasion on one or more days during the past month. Drunk in the past year was defined as being drunk on three or more days.

2.2 Adolescent Emotional/Behavioral Problems

As indicated above in the Introduction, the adolescent mental health module was adopted from the YSR Checklist and Profile developed by Thomas M. Achenbach and his colleagues (1991). The YSR was designed to assess the emotional and behavioral problems of adolescents (aged 11-18) in a standardized format. The self-report checklist comprises 118 items concerning the psychological functioning of the adolescent over the preceding six-month period. Responses to these items can be evaluated independently; in addition, these responses can also be used to construct syndrome scales in order to evaluate the adolescent for emotional and behavioral syndromes. Eight of these syndromes were calculated from the NHSDA responses: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior.

Following Achenbach (1991), psychosocial problems were also distinguished as "externalizing" and "internalizing." The externalizing scale measures overt behavioral problems, and is the combination of the scores on the Aggressive Behavior and Delinquent Behavior scales. The internalizing scale summarizes emotional problems that may not be overtly evident. It is the

combination of scores on the Withdrawn, Somatic Complaints, and Anxious/Depressed subscales. For all scales, severity was determined using values recommended by Achenbach. These cutoff points have been found to distinguish clinical (adolescents experiencing significant distress) from nonclinical (normal) populations.[4]

There have been many changes in formal classification of adolescent disorders over time. The YSR syndromes are empirically derived and correspond to well-established clinical symptoms. The YSR syndromes demonstrate significant associations with DSM diagnostic categories (Weinstein, Noam, Grimes, Stone, & Schwab-Stone, 1990). Figure 2-1 presents DSM-IIIR diagnoses and corresponding YSR syndromes as summarized by Achenbach (1991). The YSR syndromes have approximate counterparts within the revised criteria of DSM-IV as well. For example, the DSM-IV (1994) diagnosis of Conduct Disorder corresponds to the syndromes Delinquent Behavior and Aggressive Behavior, Attention Deficit-Hyperactivity Disorder corresponds to Attention Problems, and DSM-IV symptoms for Depression or Anxiety disorders correspond to Anxious/Depressed Syndrome. Other syndromes are represented in the DSM-IV as well.

Figure 2-1. Approximate Correspondences between DSM and Youth Self-Report Classifications

DSM-IIIR	Achenbach
Avoidant Disorder	Withdrawn
Somatization Disorder	Somatic Complaints
Overanxious Disorder, Major Depression, Dysthymia	Anxious/Depressed
Schizotypal Personality, Psychotic Disorder	Thought Problems
Attention Deficit-Hyperactivity Disorder	Attention Problems
Group Delinquent Conduct Disorder	Delinquent Behavior
Solitary Aggressive Conduct Disorder	Aggressive Behavior
Oppositional Defiant Disorder	Aggressive Behavior

Source: Achenbach, 1991, page 156, Table 9.2.

Table 2.1 presents the sample size of each age group overall (combined 1994-1996 NHSDAs) and the sample size for each age group by gender subgroup. Tables 2.2 and 2.3 present

[4] The cutoffs are Achenbach's T=60 or more for psychosocial problems and the behavioral ("externalizing") and emotional ("internalizing") scores, and T=67 or more for the individual syndromes such as "withdrawn." See Achenbach, T.M., *Manual for the Youth Self-Report and 1991 Profile*, Burlington, VT: University of Vermont Department of Psychiatry (1991).

the estimated population sizes and percentages respectively for each of these age by gender subgroups.

2.3 Statistical Methods

Percentage estimates in the text tables of Chapters 3 and 4 have been rounded to the nearest one-tenth of 1 percent and screened to determine whether they meet a required level of statistical precision. Relative likelihood (odds-ratio) estimates in this report have been rounded to the nearest one-hundredth of 1 percent. Differences between demographic subgroups reported in the text are statistically significant at the .001 level.

Details of the statistical precision requirements, sample weighting, estimation, and statistical testing are discussed in Appendix B. The estimates and the standard errors fully take into account the complex sample design of the NHSDA. Appendix B also presents details of the logistic regression models used in this report.

In interpreting the estimates presented in this report, it is useful to remember that associations between variables are more likely to be statistically significant when the sample size is large. Associations involving measures with low overall prevalence are more difficult to identify as statistically significant than those involving measures with high overall prevalence. The results based on small subgroups should be interpreted cautiously. Interpretation of the findings should be based on broad patterns in the estimates, rather than strictly on the basis of statistical significance. Persistent or recurring patterns in the data are often informative, even when such trends and patterns are not consistently identified in statistical testing.

Table 2.1 Number of Respondents (Unweighted Ns), by Age Group and Gender: 1994-1996 Combined NHSDAs

		Age Group			
Demographic Characteristics		**12-13**	**14-15**	**16-17**	**Total**
Total		4,602	4,722	4,507	13,831
Gender	Male	2,326	2,415	2,181	6,922
	Female	2,276	2,307	2,326	6,909
Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-6					

Table 2.2 Estimated Number of People (in Thousands) in the U.S. Civilian Non-institutionalized Population (Weighted Ns), by Age Group and Gender: 1994-1996 Combined NHSDAs

		Age Group			
Demographic Characteristics		**12-13**	**14-15**	**16-17**	**Total**
Total		7,315	7,732	7,117	22,164
Gender	Male	3,729	4,056	3,559	11,344
	Female	3,586	3,676	3,558	10,820
Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-6					

Table 2.3 Estimated Percentage of the U.S. Civilian, Non-institutionalized Population, by Age Group and Gender: 1994-1996 Combined NHSDAs

		Age Group			
Demographic Characteristics		**12-13**	**14-15**	**16-17**	**Total**
Total		33.0	34.9	32.1	100.0
Gender	Male	51.0	52.5	50.0	51.2
	Female	49.0	47.5	50.0	48.8
		100.0	100.0	100.0	100.0
Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-6					

Chapter 3: Psychological Functioning and Adolescent Substance Use

This chapter examines the association between psychological functioning and use of alcohol, tobacco, and illicit drugs among adolescents using the combined 1994-1996 National Household Survey on Drug Abuse. The 1994-1996 NHSDA includes mental health data that was not previously available. The association between substance use and the severity of emotional or behavioral problems is examined in a nationally representative sample of the civilian non-institutionalized population age 12 and older. Findings are presented for the entire sample and for early (ages 12 to 13), middle (ages 14 to 15) and late (ages 16 to 17) male and female adolescents.

3.1 Introduction

Early signs of emotional disorders frequently appear during adolescence. Substance use often begins and escalates during adolescence as well. However, the relationship between adolescents' substance use and predisposing psychological factors remains poorly understood.

3.2 Substance Use Among Adolescents

Table 3.1 presents age and gender patterns for indicators of substance use, including measures pertaining to alcohol, cigarettes, marijuana, and illicit drugs. For every measure considered,[5] the prevalence is highest among older adolescents (ages 16 to 17), followed by middle adolescents (ages 14 to 15). Prevalence rates are generally lowest among early adolescents (ages 12 to 13). This pattern, observed for both males and females, underscores the critical significance of the adolescent period of development.

3.3 Cigarette Smoking Among Adolescents

For both male and female adolescents aged 12 to 13, approximately 9 percent reported past-month cigarette smoking. Among adolescents aged 14 to 15, the reported rates more than doubled, to 19 percent for males and to 20 percent for females. Among older adolescents aged 16 to 17, 31 percent of males and 27 percent of females reported past-month cigarette smoking. A

[5]The percentages in Table 3.1 and subsequent tables are based on cross-sectional rather than longitudinal or panel data.

sizable percentage of older adolescents reported that they smoked cigarettes; 11 to 12 percent reported smoking almost daily. Examination of specific age groups indicates that adolescent males and females do not differ significantly in prevalence of cigarette smoking.

3.4 Alcohol Use Among Adolescents

Approximately 7 to 8 percent of very young adolescents aged 12 to 13 reported use of alcohol within the preceding month. Approximately 2 percent of adolescents aged 12 to 13 reported being drunk in the past year. These findings suggest that initiation into alcohol use occurs very early for some adolescents, nearly in childhood. The prevalence of past-month alcohol use for 14- to 15-year-old adolescents is 20 to 21 percent—more than double that of 12- to 13-year-olds. By late adolescence (ages 16 to 17), the figures are approximately 36 percent for males and 31 percent for females. Past-month alcohol use, binge drinking, and drunken episodes in the past year are more prevalent among older adolescent (aged 16 to 17) males than females, but the prevalence does not differ by gender among younger adolescents. The prevalence of alcohol dependence does not differ for males and females.

3.5 Use of Marijuana and Other Illicit Drugs Among Adolescents

Approximately 2 percent of very young adolescents reported past-month marijuana use. The prevalence rate is approximately 7 percent for adolescents aged 14 to 15. Among older adolescents aged 16 to 17, approximately 15 percent of males and 11 percent of females reported past-month marijuana use. The prevalence of current marijuana use is significantly higher among older adolescent males aged 16 to 17 than it is among females in the same age group but does not differ significantly in the younger age groups. Approximately 3 to 4 percent of very young adolescents aged 12 to 13 reported current involvement with illicit drugs including marijuana, cocaine, crack, inhalants, hallucinogens, and heroin, among others. Among older adolescents aged 16 to 17, involvement with illicit drugs including marijuana was reported by approximately 17 percent of males and 13 percent of females. Males and females do not differ significantly in illicit drug use.

3.6 Psychological Functioning Among Adolescents

Table 3.2 presents information concerning psychological functioning among adolescents. The percentages of adolescents reporting significant emotional and behavioral problems are presented for different age groups by gender. The measures of emotional problems and behavioral problems which are the principal focus of Chapter 3 are based on the Achenbach YSR. The Achenbach scales representing specific syndromes are presented in Figure 3-1 (and discussed further in Chapter 4). Syndromes in the YSR can be conceptualized as reflecting either an internal or external expression of psychological functioning. This distinction is consistent with influential theories characterizing adolescents as Overcontrolled vs. Undercontrolled (Achenbach & Edelbrock, 1978); as characterized by Inhibition vs. Aggression (Miller, 1967); and contrasting Personality vs. Conduct Problems (Peterson, 1961). The measure of emotional problems ("Internalizing") is constructed by combining scores for the Withdrawn, Somatic Problems, and Anxious/Depressed scales. The measure of behavioral problems is constructed by combining scores for the Delinquent and Aggressive Behavior scales ("Externalizing").[6] The Achenbach scales and summary measures are described more extensively in an earlier mental health report (SAMHSA, 1996).

The YSR syndromes and summary measures can be evaluated for severity according to the following classification: normal, borderline, or clinical. The borderline and clinical classifications indicate the presence of significant problems. Table 3.2 presents the percentages of adolescents who were in the borderline or clinical range for emotional and behavioral problems. Among adolescents surveyed in the 1994-B-1995-1996 NHSDA, approximately 13 percent reported significant emotional problems as evidenced by measures of withdrawal, somatic problems, anxiety, and depression (Emotional Problems). Approximately 17 percent of the adolescents surveyed

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[6]For this investigation the delinquent behavior scale and the corresponding behavioral problem summary measure were slightly modified. These measures were computed using all designated YSR items *except* the drug use item in order to avoid spurious inflation of associations due to content redundancy with the substance use measures. We found the average scores on both the delinquent scale and the behavioral problem summary scale to be lower when the drug use item was omitted, but the median scores of both measures are nearly identical with and without the drug use item. Similarly, for each of the two scales, the percentage of NHSDA adolescents scoring above the Achenbach cutpoint is approximately the same regardless of whether the drug use item is used. Thus, we did not change Achenbach's cutpoint for "borderline" on either the delinquent scale or the behavioral summary scale, even though both scales were modified by omitting the drug use item when we summed up the item scores to produce the delinquent behavior scale and the behavioral problem summary scale.

Figure 3-1 Syndrome and Problem Scales of the Youth Self-Report

Withdrawn[1]	Somatic Complaints[1]	Anxious/ Depressed[1]	Social Problems	Thought Problems	Attention Problems	Delinquent Behavior[2]	Aggressive Behavior[2]
Rather be alone	Dizzy	Lonely	Acts young	Can't get mind off certain thoughts	Acts young	No guilt	Argues
Won't talk	Tired	Cries	Clings	Hears things others don't	Concentrate	Hangs around kids who get in trouble	Brags
Secretive	Aches	Harms self	Not get along	Repeats acts	Trouble sitting still	Lies/cheats	Mean
Shy	Headaches	Fears might think/do something bad	Teased	Sees things others don't	Confused	Prefers to be with older kids	Demands attention
Underactive	Nausea	Perfect	Not liked	Stores up things	Daydreams	Runs away	Destroys property
Sad	Eye problems	Unloved	Clumsy	Strange behavior	Impulsive	Sets fires	Destroys others' property
Withdrawn	Skin problems	Others out to get them	Prefers younger kids as friends	Strange ideas	Nervous	Steals from home	Disobeys school
	Stomach problems	Worthless	Withdrawn		Poor school work	Steals from outside	Jealous
	Vomiting	Nervous			Clumsy	Swears	Fights
		Fearful				Truant	Attacks
		Guilty				Uses alcohol/drugs	Screams
		Self-conscious					Show-off
		Suspicious					Stubborn
		Talks suicide					Mood change
		Sad					Talks too much
		Worried					Teases
							Temper
							Threatens others
							Loud

[1] **Emotional Problems** [E] sums up the scores on three syndrome scales: Withdrawn, Somatic Complaints, and Anxious/Depressed.
[2] **Behavioral Problems** [B] sums up the scores on two syndrome scales: Delinquent Behavior and Aggressive Behavior.

33

34

reported the behavioral problems indicated by aggressive or delinquent behavior. Emotional and behavioral problems were commonly reported even by very young adolescents. Among early adolescents aged 12 to 13, emotional problems were reported by approximately 13 percent of males and 10 percent of females; behavioral problems were reported by approximately 13 percent of males and 16 percent of females.

The percentage of males who reported emotional problems was approximately 12 to 13 percent for all three age groups. The percentage of females with significant emotional problems is 10 percent among very young adolescents aged 12 to 13 and is approximately 16 percent among older adolescents aged 14 to 17. The percentage of males with significant behavioral problems is approximately 13 to 15 percent for all age groups. The percentage of females with significant behavioral problems is 16 percent among very young adolescents aged 12 to 13 and 22 percent among older adolescents aged 14 to 17.

3.7 Psychological Factors and Substance Use Among Adolescents

Tables 3.3-3.7 present findings concerning the association between the presence of emotional/behavioral problems and substance use among adolescents. To examine patterns of association, emotional and behavioral problems were subclassified according to three levels of severity. Adolescents with measures within the Achenbach range for significant difficulty (borderline clinical and clinical) were classified as *high*. Adolescents with measures below the median were classified as *low*. Adolescents with measures above the median but below the Achenbach range for significant difficulty were classified as *intermediate*. The tables present the percentage of adolescents who reported substance use within the three severity classifications (low, intermediate, and high) for emotional problems and for behavioral problems.[7] The findings are presented for the entire sample and for the three age groups of males and females.

Patterns of substance use corresponding to levels of emotional or behavioral problems represent suggestive evidence concerning association. If there is a risk relation, the severity of the problems should be associated with greater likelihood of substance use. Adolescents who

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[7]To summarize: low, adolescents who scored below the median; intermediate, those above the median score but below the Achenbach borderline score; high, those equal to or above the Achenbach borderline score. The use of two cutpoints in these analyses, the median score among adolescents surveyed in NHSDA and the borderline score originally developed by Achenbach, is a useful innovation.

evidence more serious problems should demonstrate greater likelihood of substance use than would adolescents with intermediate or low levels.

3.8 Psychological Factors and Cigarette Smoking

Tables 3.3 and 3.3a present information concerning cigarette smoking among adolescents classified according to the severity of emotional and behavioral problems.

3.8.1 Emotional Problems and Cigarette Smoking

Adolescents with serious emotional problems were significantly more likely to report cigarette smoking than were those with intermediate or low levels of emotional problems (Table 3.3). Adolescents with significant emotional problems were nearly twice as likely to have smoked in the past month as were those with low levels of emotional problems. Past-month smoking was reported by 16 percent of adolescents with low emotional problem scores, by 21 percent of those with intermediate problem scores, and by 30 percent of those with significant emotional problems. This pattern was also indicated when the prevalence of smoking was examined within specific age groups. Adolescents with high scores for emotional problems had higher rates of smoking than did those with low scores.

Adolescents with high scores for emotional problems were significantly more likely to smoke daily than were those with low scores (Table 3.3a). Those with high levels of emotional problems were nearly twice as likely to smoke daily as were those with low emotional problem scores. Daily smoking was reported by 4 percent of adolescents with low levels of emotional problems, by 6 percent of those with intermediate problem scores, and by 8 percent of those with serious emotional problems. With the exception of females aged 12 to 13, a consistent pattern is observed in the different age and gender groups.

3.8.2 Behavioral Problems and Cigarette Smoking

Adolescents with serious behavioral problems were significantly more likely to report cigarette smoking than were those with intermediate or low levels of behavioral problems (Table 3.3). Adolescents with serious behavioral problems were over three times more likely to have smoked in the past month than were those with low problem scores. Past-month

smoking was reported by 12 percent of adolescents with low levels of behavioral problems, by 22 percent of those with intermediate problem scores, and by 39 percent of those with the most serious behavioral problems. A similar pattern is indicated within specific age groups for both males and females.

Adolescents with high scores for behavioral problems were over four times more likely to smoke daily than were those with low scores (Table 3.3a). Daily smoking was reported by 3 percent of adolescents with low levels of behavioral problems, by 5 percent of those with intermediate problem scores, and by 13 percent of those with significant behavioral problems. Consistently, in the different age groups for both males and females, adolescents with high scores for behavioral problems have higher rates of daily smoking than do those with low scores.

3.9 Psychological Factors and Alcohol Use

Tables 3.4-3.4c present information concerning alcohol use among adolescents classified according to the severity of emotional and behavioral problems.

3.9.1 Emotional Problems and Alcohol Use

The severity of emotional problems is associated with increased likelihood of adolescent alcohol use. Adolescents with high levels of emotional problems were nearly twice as likely as those with low problem scores to have used alcohol in the past month. Past-month alcohol use was reported by approximately 17 percent of adolescents with low emotional problem scores, by 22 percent of those with intermediate problem scores, and by 31 percent of those with serious emotional problems. This pattern was observed among both males and females for very young adolescents aged 12 to 13, for adolescents aged 14 to 15, and for older adolescents aged 16 to 17. Among those with serious emotional problems, alcohol use was highest for older adolescents aged 16 to 17 (43 to 44 percent). A corresponding figure of 14 percent was indicated for very young adolescents aged 12 to 13 with serious emotional problems.

Examination of other alcohol use indicators suggests a consistent pattern of findings. **The severity of emotional problems is associated with significantly greater likelihood of binge drinking in the past month** (Table 3.4a) **and of drunken episodes in the past year**

(Table 3.4b). Across the various combinations of gender and age, adolescents with high scores for emotional problems tended to report more binge drinking and drunken episodes than those with low scores.

3.9.2 Emotional Problems and Alcohol Dependence

The severity of emotional problems is significantly associated with increased likelihood of alcohol dependence among adolescents (Table 3.4c). Alcohol dependence was reported by 2 percent of adolescents with low levels of emotional problems, by 5 percent of those with intermediate problem scores, and by 10 percent of those with significant emotional problems. Adolescents with more serious emotional problems were four times more likely to report alcohol dependence than those with low levels of emotional problems. Within specific age groups, **adolescents with high scores for emotional problems had significantly higher rates of alcohol dependence than those with low scores.**

3.9.3 Behavioral Problems and Alcohol Use

The severity of behavioral problems in adolescents is significantly associated with increased likelihood of adolescent alcohol use (Table 3.4). Past-month alcohol use was reported by approximately 14 percent of adolescents with low levels of behavioral problems, by 23 percent of those with intermediate problem scores, and by 38 percent of those with significant behavioral problems. **Adolescents with serious behavioral problems were nearly three times more likely to use alcohol than those with low levels of behavioral problems.**

Adolescents with serious behavioral problems were significantly more likely to use alcohol than those with less serious behavioral problems. This pattern was observed among both males and females for very young adolescents aged 12 to 13, for adolescents aged 14 to 15, and for older adolescents aged 16 to 17. Alcohol use was highest among older adolescents aged 16 to 17 with serious behavioral problems: 56 percent for males and 50 percent for females. More than 20 percent of very young adolescents with serious behavioral problems reported alcohol use.

The likelihood of past-month binge drinking (Table 3.4a) **and drunken episodes in the past year** (Table 3.4b) **increases with the severity of behavioral problems.** This pattern was observed among both males and females for very young adolescents aged 12 to 13, for adolescents aged 14 to 15, and for older adolescents aged 16 to 17.

3.9.4 Behavioral Problems and Alcohol Dependence

The severity of behavioral problems is significantly associated with increased likelihood of alcohol dependence among adolescents (Table 3.4c). Alcohol dependence was reported by approximately 2 percent of adolescents with low scores for behavioral problems, by 4 percent of those with intermediate problem scores, and by 13 percent of those with significant behavioral problems. Adolescents with serious behavioral problems were nearly eight times more likely to report alcohol dependence than those with low levels of behavioral problems. **Adolescents with high scores for behavioral problems had significantly higher rates of alcohol dependence than those with low scores, across all the combinations of gender and age.** The findings support the conclusion that behavioral problems are highly associated with the likelihood of alcohol use among adolescents. For every alcohol measure, the severity of behavioral problems is associated with increased risk of use.

3.10 Psychological Factors and Marijuana Use

Table 3.5 presents information concerning marijuana use among adolescents classified by the severity of emotional and behavioral problems.

3.10.1 Emotional Problems and Marijuana Use

The severity of emotional problems is significantly associated with increased likelihood of marijuana use among adolescents (Table 3.5). Adolescents with more serious emotional problems were twice as likely to report marijuana use as were those with low levels of emotional problems. Past-month marijuana use was reported by 6 percent of adolescents with low emotional problem scores, by 8 percent of those with intermediate problem scores, and by 12 percent of those with serious emotional problems. A consistent pattern was observed in the different age groups for males and females. **Adolescents with high scores for emotional problems had higher rates of marijuana use than those with low scores.**

Marijuana use is highest among older adolescents aged 16 to 17 with serious emotional problems: 21 percent for males and 15 percent for females. For very young adolescents aged 12 to 13 with serious emotional problems, the corresponding rates are 3 percent for males and 6 percent for females.

3.10.2 Behavioral Problems and Marijuana Use

The severity of behavioral problems is significantly associated with increased likelihood of marijuana use among adolescents (Table 3.5). Adolescents with serious behavioral problems were over four times more likely to report marijuana use than those with low levels of behavioral problems. Past-month marijuana use was reported by 4 percent of adolescents with low levels of behavioral problems, by 8 percent of those with intermediate problem scores, and by 17 percent of those with significant behavioral problems. Adolescents with serious behavioral problems were significantly more likely to use marijuana than those with less serious behavioral problems. This pattern was observed in the different age groups for both males and females. Marijuana use was highest among older adolescents aged 16 to 17 with serious behavioral problems: 26 percent for males and 21 percent for females. For very young adolescents aged 12 to 13 with serious behavioral problems, the corresponding rates were 6 percent for males and 7 percent for females.

3.11 Psychological Factors and Use of Illicit Drugs Other Than Marijuana

Table 3.6 presents information concerning use of illicit drugs other than marijuana among adolescents classified according to the severity of emotional and behavioral problems. This table presents information concerning use of substances including , cocaine, crack, inhalants, hallucinogens, heroin, and abused prescription drugs.

3.11.1 Emotional Problems and Use of Illicit Drugs Other Than Marijuana

The severity of emotional problems is significantly associated with increased likelihood of using illicit drugs such as cocaine, crack, inhalants, hallucinogens, heroin, or abused prescription drugs (Table 3.6). Adolescents with serious emotional problems were approximately four times more likely than those with low levels of emotional problems to use these illicit drugs (Table 3.6). Past-month use of illicit substances other than marijuana was reported by approximately 3 percent of adolescents with low levels of emotional problems, by 5 percent of those with intermediate problem scores, and by 10 percent of those with significant emotional problems. This pattern was observed in the different age and gender groups with the exception of males aged 12 to 13. Use of illicit substances other than marijuana was highest

among adolescent males aged 16 to 17 (13 percent) and females aged 14 to 15 (11 percent) with serious emotional problems.

3.11.2 Emotional Problems and Dependence on Illicit Drugs

The severity of emotional problems is associated with increased likelihood of illicit drug dependence (Table 3.6a). Adolescents with serious emotional problems were four times as likely as those with low emotional problem scores to be dependent on illicit drugs. More than 7 percent of adolescents with serious emotional problems reported dependence on substances such as cocaine, crack, inhalants, hallucinogens, heroin or abused prescription drugs. Illicit drug dependence was reported by approximately 4 percent of adolescents with intermediate scores and by less than 2 percent of those with low emotional problem scores. A consistent pattern was observed within specific age groups. For all age and gender groups except males aged 12 to 13, the prevalence of illicit drug dependence was significantly higher among adolescents with serious emotional problems. The highest rates of illicit drug dependence were among older adolescents aged 16 to 17 with serious emotional problems: nearly 13 percent for males and 10 percent for females. Among very young adolescents with serious emotional problems, illicit drug dependence was reported by less than 1 percent of males and by 4 percent of females.

3.11.3 Emotional Problems and Need for Illicit Drug Treatment

The severity of emotional problems is associated with increased likelihood of needing treatment for illicit drug abuse (Table 3.6b). Adolescents with serious emotional problems were over four times more likely than those with low emotional problem scores to need illicit drug treatment. Nearly 11 percent of adolescents with serious emotional problems reported needing treatment for abuse of substances such as cocaine, crack, inhalants, hallucinogens, heroin or prescription drugs. Need for illicit drug treatment was reported by 5 percent of adolescents with intermediate scores and by less than 3 percent with low emotional problem scores. When examined within specific age and gender groups, need for illicit drug abuse treatment was greater among those with serious emotional problems. With the exception of adolescent males aged 12 to 13, this difference was significant for all age and gender groups.

3.11.4 Behavioral Problems and Use of Illicit Drugs Other Than Marijuana

Among adolescents the severity of behavioral problems is associated with increased likelihood of using illicit drugs (Table 3.6). Past-month use of substances such as cocaine, crack, inhalants, hallucinogens, heroin, or abused prescription drugs was reported by approximately 2 percent of adolescents with low behavioral problem scores, by 4 percent of those with intermediate problem scores, and by 13 percent of those with significant behavioral problems. Adolescents with more serious behavioral problems were nearly seven times more likely to use these illicit substances than were those with low problem scores.

Within specific age groups, past-month use of illicit drugs increased with the severity of behavioral problems (Table 3.6). Adolescents with serious behavioral problems were significantly more likely to use illicit drugs than were those with less serious behavioral problems. This pattern was observed among both males and females for very young adolescents aged 12 to 13, for adolescents aged 14 to 15, and for older adolescents aged 16 to 17. For very young adolescents aged 12 to 13 with serious behavioral problems, the rate of illicit drug use other than marijuana was 7 percent for males and 10 percent for females. The rate of illicit drug use was highest for older adolescents aged 16 to 17 with serious behavioral problems: 17 percent for males and 15 percent for females.

3.11.5 Behavioral Problems and Dependence on Illicit Drugs

The severity of behavioral problems is associated with increased likelihood of illicit drug dependence among adolescents (Table 3.6a). Dependence on substances such as cocaine, crack, inhalants, hallucinogens, heroin or abused prescription drugs was reported by nearly 10 percent of adolescents with serious behavioral problems, by 3 percent of those with intermediate behavioral problems, and by 1 percent of those with low levels of behavioral problems. Adolescents with serious behavioral problems were nearly nine times as likely as those with low behavioral problem scores to report illicit drug dependence. For all age and gender groups except males aged 12 to 13, adolescents with serious behavioral problems were more likely to be dependent on illicit drugs.

3.11.6 Behavioral Problems and Need for Illicit Drug Treatment

The severity of behavioral problems is associated with increased likelihood of needing treatment for illicit drug abuse (Table 3.6b). Adolescents with serious behavioral problems were nearly nine times as likely as those with low behavioral problem scores to need illicit drug treatment. Nearly 14 percent of adolescents with serious behavioral problems reported needing treatment for abuse of substances such as cocaine, crack, inhalants, hallucinogens, heroin or prescription drugs. Need for illicit drug treatment was reported by 4 percent of adolescents with intermediate scores and by less than 2 percent of those with low behavioral problem scores. When examined within specific age and gender groups, need for illicit drug abuse treatment was greater among those with serious behavioral problems.

3.12 Alcohol or Illicit Drug Dependence

Table 3.7 presents information concerning dependence on alcohol or illicit drugs among adolescents classified according to the severity of emotional and behavioral problems.

3.12.1 Emotional Problems and Alcohol or Illicit Drug Dependence

The severity of emotional problems is associated with increased likelihood of adolescent alcohol or illicit drug dependence (Table 3.7). Adolescents with significant emotional problems were nearly four times as likely to report dependence as were those with low emotional problem scores. Alcohol or illicit drug dependence was reported by approximately 3 percent of adolescents with low emotional problem scores, by 7 percent of those with intermediate problem scores, and by 13 percent with significant emotional problems. Within specific age groups, the prevalence of dependence (Table 3.7) was consistently higher for adolescents with more serious emotional problems, with the exception of adolescent males aged 12 to 13. Older adolescents with serious emotional problems had the highest rates of dependence on alcohol or illicit drugs: 23 percent for males 19 percent for females. The corresponding rates for younger adolescents aged 12 to 13 were 3 percent for males and 9 percent for females.

3.12.2 Behavioral Problems and Alcohol or Illicit Drug Dependence

The severity of behavioral problems is associated with increased likelihood of alcohol or illicit drug dependence (Table 3.7). Adolescents with significant behavioral

problems were over seven times more likely to report dependence than those with low behavioral problem scores. Alcohol or illicit drug dependence was reported by approximately 2 percent of adolescents with low behavioral problem scores, by 6 percent of those with intermediate problem scores, and by 17 percent of those with significant behavioral problems.

Within specific age groups, dependence increased with the severity of behavioral problems. This pattern was observed among both males and females for very young adolescents aged 12 to 13, for adolescents aged 14 to 15, and for older adolescents aged 16 to 17. Dependence on alcohol or illicit drugs was highest among older adolescents aged 16 to 17 with serious behavioral problems (26 percent). The corresponding rates for very young adolescents aged 12 to 13 were 4 percent for males and 9 percent for females.

3.13 Conclusions

Inspection of Tables 3.3-3.7 indicates that measures of emotional and behavioral problems tend to be directly related to the risk of substance use. The severity of emotional and behavioral problems among adolescents is associated with increased likelihood of substance use. This general pattern was indicated across substance use measures and across age and gender combinations. Adolescents with significant emotional and behavioral problems were much more likely to use substances than were those with less serious problems. Adolescents with significant emotional and behavioral problems were also more likely to report serious substance involvement and dependence, including use of illicit substances such as cocaine, hallucinogens, and heroin. The findings strongly suggest that emotional and behavioral problems represent significant risk factors for adolescent substance use.

Other evidence supports a risk relation between emotional disorders and substance use. Theories concerned with the etiology and transmission of emotional disorders have identified the neurotransmitters (e.g. dopamine and serotonin) that have also been implicated in theories of substance addiction. Prevalence patterns have provided evidence of vulnerability relations between specific mental and addictive disorders. For instance, high rates of alcoholism have been reported for antisocial personality disorder (e.g., Helzer & Przybec, 1988), for depression (Schuckit, 1986) and for the first degree relatives of bulimics (Kaye et al., 1986). Even though alcoholism has been studied more extensively, family studies have provided evidence suggesting vulnerability relationships between mental disorders and use of opiates (Rounsaville & Luthar,

1992). Patterns of genetic risk have been found to vary according to gender and according to adolescent vs. older age of onset (Buydens-Branchey et al., 1989; Cloninger et al., 1981; Goodwin et al., 1973; Goodwin, 1985; McGue et al., 1992; Schuckit & Gold, 1988). Specific patterns of association may have implications for theories of etiology (Klein & Riso, 1993). Longitudinal research is necessary to clarify the temporal relationship between emotional and behavioral problems and initial substance use and escalation to more serious patterns of use. There may be common genetic and psychosocial vulnerabilities for specific emotional disorders and substance use among adolescents and these risk relations may vary according to gender and age. Further research is needed to explicate the risk relation between mental health problems and substance use in adolescence. Such findings may make it possible to identify high-risk adolescents and to develop more effective interventions.

Table 3.1
Percent Using Drugs and Alcohol, by Gender and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Cigarettes - past month	**19.1**	9.2	18.6	31.0	9.1	20.5	27.1
Alcohol - past month	**20.5**	8.3	20.0	36.2	6.8	21.4	30.9
Any illicit drug - past month	**9.4**	3.9	9.2	17.1	3.1	9.8	13.4
Marijuana - past month	**7.1**	2.1	7.2	14.6	1.5	7.1	10.7
Other illicit - past month[1]	**4.4**	2.3	4.3	7.1	2.5	4.2	6.3
Alcohol - binge drinking[2]	**7.6**	1.5	7.9	18.0	1.4	5.7	11.5
Alcohol - drunk past year[3]	**10.8**	1.8	10.4	23.6	2.0	8.4	18.9
Cigarettes almost daily[4]	**5.3**	0.4	3.6	11.3	0.7	4.7	11.7
Dependence on alcohol or illicit drugs	**6.0**	1.1	5.5	11.0	1.9	6.4	10.4
Alcohol dependence	**4.4**	0.8	3.8	7.5	1.4	4.8	8.6
Illicit drug dependence	**3.2**	0.4	3.4	6.1	1.0	3.2	5.5
Need treatment for illicit drug	**4.5**	1.4	4.4	7.6	1.9	4.5	7.3

Notes: 1. Respondent reported using an illicit drug other than marijuana in the past month.
2. Respondent reported consuming five or more drinks on at least one occasion during the past month.
3. Respondent reported being drunk three or more times during the past year.
4. Respondent reported smoking on at least 25 days during the past month.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.2
Percentages of Adolescents with Emotional and Behavioral Problems, by Gender and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Emotional Problems	**13.2**	13.2	12.7	12.0	10.3	15.5	15.5
Behavioral Problems	**16.8**	12.7	14.6	14.4	16.0	22.0	21.5

Note: These are the percentages of adolescents with borderline clinical or clinical levels of psychological distress. The cutoffs are T=60 or more for emotional and behavioral problems. See Achenbach, T.M., *Manual for the Youth Self-Report and 1991 Profile*, Burlington, VT: University of Vermont Department of Psychiatry (1991).

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.3
Percentage of Adolescents Aged 12 to 17 Using Cigarettes in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**19.1**	9.2	18.6	31.0	9.1	20.5	27.1
Emotional Problems:							
High	**29.6**	13.1	25.4	41.7	19.9	34.9	40.1
Intermediate	**20.5**	9.3	18.3	31.0	12.7	21.6	28.7
Low	**15.7**	8.2	17.1	28.5	5.3	15.6	22.1
Behavioral Problems:							
High	**38.6**	23.1	33.5	55.8	27.5	40.2	47.3
Intermediate	**21.8**	10.7	21.2	34.2	10.3	23.5	28.2
Low	**11.5**	5.2	12.3	21.6	3.7	10.5	18.2

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.3a
Percentage of Adolescents Aged 12 to 17 Using Cigarettes Daily or Almost Daily in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17); 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	5.3	0.4	3.6	11.3	0.7	4.7	11.7
Emotional Problems:							
High	8.1	0.7	5.7	11.6	0.9	10.1	17.1
Intermediate	5.8	0.4	3.4	11.7	1.4	4.2	13.4
Low	4.3	0.3	3.2	10.9	0.3	3.5	9.0
Behavioral Problems:							
High	13.0	0.7	9.1	25.6	3.9	10.8	24.4
Intermediate	5.4	0.3	4.1	11.3	0.2	4.2	11.6
Low	2.9	0.4	1.6	7.2	0.1	2.3	6.6

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA. Past month Daily or Almost Daily was defined as smoking a cigarette on 25 or more of the past 30 days.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.4
Percentage of Adolescents Aged 12 to 17 Using Alcohol in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**20.5**	8.3	20.0	36.2	6.8	21.4	30.9
Emotional Problems:							
High	**30.7**	14.4	25.7	43.4	13.6	38.4	43.8
Intermediate	**21.5**	7.6	19.6	36.4	9.6	22.2	32.0
Low	**17.3**	7.3	18.9	34.4	4.0	15.9	26.3
Behavioral Problems:							
High	**38.5**	20.8	36.2	56.1	20.5	41.8	49.5
Intermediate	**22.6**	8.4	22.0	41.1	7.5	20.2	32.3
Low	**13.6**	5.4	13.8	27.0	2.8	13.2	22.6

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.4a
Percentage of Adolescents Aged 12 to 17 Binge Drinking in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**7.6**	1.5	7.9	18.0	1.4	5.7	11.5
Emotional Problems:							
High	**11.8**	3.5	11.2	23.8	3.2	11.1	17.1
Intermediate	**8.2**	1.4	7.8	17.8	2.1	6.4	12.3
Low	**6.2**	1.0	7.2	16.8	0.7	3.6	9.3
Behavioral Problems:							
High	**16.7**	4.6	16.7	33.9	5.0	15.2	22.9
Intermediate	**8.3**	1.1	7.4	21.2	1.7	5.0	10.4
Low	**4.3**	1.0	5.6	11.1	0.3	2.0	7.4

Note: High: Adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.4b
Percentage of Adolescents Aged 12 to 17 Drunk Three or More Times in the Past Year, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**10.8**	1.8	10.4	23.6	2.0	8.4	18.9
Emotional Problems:							
High	**17.7**	4.7	14.3	33.3	4.3	18.6	28.6
Intermediate	**11.6**	1.6	10.1	22.9	3.0	8.8	22.0
Low	**8.5**	1.4	9.6	21.9	1.0	5.2	13.9
Behavioral Problems:							
High	**24.1**	6.8	23.4	39.9	6.8	21.8	40.4
Intermediate	**12.7**	2.1	12.1	28.1	3.0	9.1	18.0
Low	**5.5**	0.6	5.4	15.6	0.4	2.4	10.6

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.4c
Percentage of Adolescents Aged 12 to 17 Dependent on Alcohol, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**4.4**	0.8	3.8	7.5	1.4	4.8	8.6
Emotional Problems:							
High	**10.0**	2.7	7.4	14.7	6.3	11.0	17.0
Intermediate	**5.4**	0.7	5.0	8.5	1.6	6.0	10.1
Low	**2.5**	0.4	2.3	5.1	0.4	2.2	5.0
Behavioral Problems:							
High	**13.1**	3.9	12.3	7.7	6.1	12.9	21.9
Intermediate	**4.4**	0.5	2.8	8.9	0.8	5.0	8.2
Low	**1.7**	0.3	2.1	3.6	0.3	1.2	3.3

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.5
Percentage of Adolescents Aged 12 to 17 Using Marijuana in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	7.1	2.1	7.2	14.6	1.5	7.1	10.7
Emotional Problems:							
High	11.8	3.0	10.5	21.3	5.8	14.1	15.3
Intermediate	7.8	1.9	7.5	14.4	1.6	7.0	13.3
Low	5.6	2.0	6.2	13.2	0.6	5.0	7.5
Behavioral Problems:							
High	16.6	6.1	19.1	26.1	7.4	17.3	20.8
Intermediate	8.1	1.8	7.3	17.2	1.1	7.6	11.9
Low	3.6	1.4	3.6	9.3	0.0	2.4	5.9

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.6
Percentage of Adolescents Aged 12 to 17 Using Illicit Drugs Other Than Marijuana in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**4.4**	2.3	4.3	7.1	2.5	4.2	6.3
Emotional Problems:							
High	**9.8**	5.3	8.9	13.3	9.4	11.4	10.7
Intermediate	**5.3**	1.8	4.6	8.5	3.1	5.5	8.0
Low	**2.6**	1.8	3.1	4.6	1.0	1.3	3.9
Behavioral Problems:							
High	**12.7**	7.1	15.0	17.4	10.4	10.5	15.3
Intermediate	**4.2**	2.5	3.0	7.5	1.8	4.7	5.6
Low	**1.9**	1.0	2.1	3.8	0.7	1.3	3.0

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.6a
Percentage of Adolescents Aged 12 to 17 Dependent on Illicit Drugs, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**3.2**	0.4	3.4	6.1	1.0	3.2	5.5
Emotional Problems:							
High	**7.3**	0.6	6.4	12.9	4.0	9.4	9.9
Intermediate	**3.9**	0.4	4.4	6.8	1.2	3.4	6.5
Low	**1.8**	0.4	2.0	4.0	0.3	1.2	3.4
Behavioral Problems:							
High	**9.8**	0.4	10.8	14.9	5.4	10.0	14.3
Intermediate	**3.3**	0.6	3.3	7.2	0.4**	2.1	5.2
Low	**1.1**	0.3	1.3	2.7	0.0	0.8	2.0

**Low precision

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.6b
Percentage of Adolescents Aged 12 to 17 in Need of Illicit Drug Abuse Treatment, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**4.5**	1.4	4.4	7.6	1.9	4.5	7.3
Emotional Problems:							
High	**10.7**	2.6	10.3	16.5	7.6	11.9	14.4
Intermediate	**5.2**	1.3	5.1	8.4	1.6	5.5	8.5
Low	**2.6**	1.1	2.6	4.9	1.1	1.7	4.4
Behavioral Problems:							
High	**13.9**	4.7	14.1	22.0	8.8	12.4	19.3
Intermediate	**4.3**	1.6	4.5	7.7	1.4	3.9	5.8
Low	**1.6**	0.5	1.5	3.4	0.3	1.5	3.2

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 3.7
Percentage of Adolescents Aged 12 to 17 Dependent on Alcohol or Illicit Drugs, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**6.0**	1.1	5.5	11.0	1.9	6.4	10.4
Emotional Problems:							
High	**13.2**	2.8	10.4	22.7	9.1	14.8	18.9
Intermediate	**7.3**	1.1	6.8	12.2	2.1	8.2	12.7
Low	**3.4**	0.6	3.5	7.2	0.6	2.8	6.3
Behavioral Problems:							
High	**17.1**	4.1	16.5	26.2	9.2	17.2	25.5
Intermediate	**6.4**	0.8	5.0	13.2	1.2	6.5	10.7
Low	**2.3**	0.5	2.6	5.0	0.3	1.7	4.0

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Chapter 4: Methodological Considerations in Using the Youth Self Report (YSR) to Identify Substance Users

4.1 Introduction

This chapter further examines the association between psychological functioning and substance use in a nationally representative sample of the civilian noninstitutionalized population aged 12 to 17. Data from the combined 1994-1996 NHSDA is examined, including measures of psychological functioning not available in previous surveys. The chapter evaluates the association between measures of psychological functioning and use of illicit drugs, alcohol and tobacco, as well as substance dependence and need of drug abuse treatment, for very young (aged 12 to 13), middle (aged 14 to 15), and older adolescent (aged 16 to 17) males and females. In addition, this chapter evaluates measurement properties of the eight syndrome scales of the YSR. It examines scale elevations, interitem consistencies, and correlations among scales compared with normative data presented by Achenbach (1991). Logistic regression analyses are conducted to identify the syndromes most associated with substance use. Individual items within those syndromes are examined to determine specific emotional factors associated with substance use. Determining the items in the YSR that are most associated with substance use will make it easier to identify high-risk adolescents and inform intervention efforts.

4.2 The YSR

The YSR syndrome scales, which were developed through empirical methods, form continuous measures for eight dimensions of psychological functioning. The eight syndrome scales of the YSR are formed from scores on 86 items, each of which is rated on a three-point scale. For example, the item "I have a hot temper" would be rated 0 if "not true," 1 if "somewhat or sometimes true," or 2 if "very true or often true in the past six months." By summing the individual items of each scale, measures are obtained for eight different syndromes: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior. The syndrome scales are presented in Figure 3-1.

Elevated syndrome levels are used to classify individuals according to clinical prototypes. Even though this method of diagnosis differs from the standard psychiatric practice of sorting individuals into categories based on the presence or absence of symptoms (Achenbach and McConaughy, 1997), research and practice demonstrates overlap between results derived from this prototype model and those of categorically-based DSM diagnoses (see Chapter 3, this volume, and Achenbach, 1991, p. 196). Further details about the rationale and construction of the scales are given by Achenbach (1991).

4.3 Descriptive Results

Table 4.1 presents national NHSDA estimates of means and standard errors for the eight syndrome scales for 1994, 1995, and 1996 by gender and age group. Achenbach (1991) gives means and standard errors for two samples of youth, aged 11 to 17 or 18. One sample, the referred or clinical sample, consisted of youths who were referred to psychiatric clinics for help with a problem. The other sample, the nonreferred or nonclinical sample, was a matched sample of youth who were not referred to a clinic. The national NHSDA estimates are based on a nonclinical sample and are generally similar to those of the nonclinical samples reported by Achenbach (1991). However, adolescents in the national sample were generally less withdrawn, and less likely to report attention problems or anxiety/depression. Compared to adolescents in the Achenbach nonclinical samples, males in the national sample tended to report less aggressive behavior and females tended to report more somatic complaints, thought problems, and delinquent behavior. These differences may be due to the composition of specific groups. All other national estimates are generally consistent with those of the nonclinical samples reported by Achenbach.

Interitem consistency. To examine construct validity, the extent to which the measures represent a theoretical concept, coefficient alpha for each scale was calculated for each gender group. Results are shown in Table 4.2. Reliability coefficients for the NHSDA data range from .53 to .84, comparable to those reported by Achenbach. The coefficients are generally higher for females than for males. As expected, coefficients are generally higher for scales with greater numbers of items.

The following section presents psychometric properties of the widely-used YSR in a nonreferred nationally representative sample. Generally, the measures of emotional and behavioral problems in the national samples approximated those of the nonclinical reference sample reported by Achenbach (1991); however, the nonclinical sample males differed from the comparable national samples more than did the nonclinical sample. Internal consistency measures for the subscales were close to those reported by Achenbach (1991). The one exception was for Social Problems, which showed substantially less internal consistency in the combined national samples than it did in the norming sample. Compared to the norming samples, the internal consistency coefficients for the various syndromes were somewhat lower in the national samples, with the exception of Withdrawn, which showed slightly higher internal consistency in the national samples. Less independence among scales is indicated in the national samples than was reported for the norming sample. On average, scales were correlated in the .52 range, although the average intercorrelation decreased slightly for the older groups. Withdrawn and Anxious/Depressed were the most closely related for all age and gender combinations; the relationships between Somatic Complaints, Social Problems, and Delinquent Behavior were generally lowest.

4.4 Relationships Among Syndromes

Tables 4.3 through 4.6 show the intercorrelations among the syndrome scales in the aggregated 1994 through 1996 data, overall and by age and gender group. Inspection of the tables suggests substantial intercorrelations among the scales. Mean and median correlations for the different combinations of age and gender range from .50 to .56 (Table 4.7). Achenbach (1991) reported a moderate degree of relationship among syndromes in the nonclinical sample. The mean correlation among the eight subscales was .43 (median, .44) for females and .39 (median, .37) for males. Correlations ranged from a low of .18 between Social Problems and Delinquent Behavior for females and .23 for males, to a high of .63 between Anxiety/Depression and Attention Problems for females (and .61 for males). On average, the intercorrelations in the national data are higher than those in Achenbach's (1991) norming samples. Generally, patterns of association among the various syndromes were somewhat higher in the national sample than in Achenbach's norming sample. The Achenbach non-clinical samples excluded adolescents who

had received clinical treatment or who were enrolled in remedial classes in the past year. These adolescents were not excluded from the NHSDA data. The patterns of association indicated here are based on a national probability sample and may be considered representative of the non-institutionalized adolescent population in the United States.

4.5 Relationship of Syndromes to Substance Use

Logistic regression was used to assess the relationship between syndromes and substance use for the different age and gender groups. For these analyses, the eight YSR syndrome scales were used to predict each of the individual measures of substance use (e.g., past month cigarette smoking). The analyses were conducted for the entire sample and for each specific age and gender group (e.g., 12 to 13 year old males). Results are shown in Tables 4.8 to 4.14. Delinquent Behavior was the syndrome most associated with substance use, followed by scales measuring Social Problems and Attention Problems. Delinquent Behavior was consistently associated with substance use even when the alcohol and drug use item was omitted from the scale. This result indicates that mild to serious substance use is associated with various other forms of delinquent behavior in a national sample of adolescents. In addition, this finding confirms the placement of the alcohol and drug use item in the Delinquent Behavior scale (Achenbach, 1991).

Because logistic regression models are nonlinear, for continuous independent variables the contribution of the regression coefficent in estimating the probability of the outcome variable depends on the value of the variable of interest and the values of other variables in the model.[8] To illustrate key findings, different values of the syndrome of interest are selected to illustrate the difference in the estimated probability of substance use. The value for all other syndromes is set at the respective mean. For example, the estimated probability of past month marijuana use for adolescents aged 12 to 17 with the lowest possible raw score for Delinquent Behavior (0) was approximately .02. The probability of past month marijuana use increased with higher raw scores on the Delinquent Behavior syndrome. The estimated probability of past month marijuana use was .40 for adolescents with Delinquent Behavior raw scores of 10 (out of 20). The

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[8]The equation for predicting the probability of membership in a substance use group from a logistic regression model is as follows: $P(User)= (e^{(B_0 + X_1*B_1 + X_2*B_2 ... + X_k*B_k)})/(1+e^{(B_0 + X_1*B_1 + X_2*B_2 ... + X_k*B_k)})$, where B_0 is the intercept term, X_1, X_2 ...X_k are values of the independent variables in the model and B_1, B_2, ... B_k are regression coefficients for each of the independent variables (Hosmer & Lemeshow, 1989; pp. 25-26).

estimated probability for adolescents with raw scores of 15 was .81. For adolescents with the highest Delinquent Behavior raw score, the estimated probability of past month marijuana use was .96. A similar pattern was indicated for other substances, for substance dependence, and for need for treatment. For adolescents with low raw scores for Delinquent Behavior, the estimated probability of need for illicit drug abuse treatment was less than .01. In contrast, for those with the highest raw score (20), the probability of needing treatment for substance abuse was .94.

The relationship between measures of Social Problems and substance use is more complex. The association is negative in each analysis. Adolescents who use substances are *less* likely to report the behaviors or experiences comprising the Social Problems scale. This relationship does not depend on substance type or severity, or on adolescent age or gender. Substance use is influenced by social factors such as vulnerability to peer pressure and association with older adolescents. Association with other adolescents may provide more opportunities for substance use. The relationship between specific items comprising the Social Problems scale and substance use indicators is considered further in the item-level analysis.

The relation of Attention Problems to substance use is more straightforward. The positive coefficients for this scale indicate that substance use is associated with the presence of Attention Problems. This relationship does not differ by age or gender. For adolescents with low raw scores for Attention Problems, the estimated probability of past month alcohol use was lower. For those with the lowest possible raw score (0), the estimated probability of past month alcohol use was .15. For those with a raw score of 6 for Attention Problems, the probability of past month alcohol use increased to .19 and for those with a raw score of 12 the probability increased to .24. For those with the highest possible raw score for Attention Problems, the probability of past month alcohol use was estimated to be .30. A similar pattern was indicated for past month cigarette smoking. For adolescents with the highest possible raw score for Attention Problems (18), the estimated probability of smoking was approximately .39 vs. an estimated probability of .12 for those with the lowest raw score for Attention Problems (0).

Associations of other syndromes to substance use were more specific to age and gender, and dependent on the substance use indicator. A negative association with substance use was indicated for the scale measuring withdrawal (Withdrawn). Those adolescents who reported substance use were *less* likely to report the items comprising this scale. This pattern was most

evident for cigarette use. The Somatic Complaints syndrome was associated with alcohol use, alcohol dependence, and substance dependence for females, and with cigarette use for 14- and 15-year-old males. Males aged 12 to 13 who were determined to be in need of substance abuse treatment reported *fewer* Somatic Complaints.

The Anxiety/Depression scale was significantly related to substance abuse in six of the analyses. For example, the estimated probability of past month cigarette smoking was estimated to be .15 for those with the lowest possible raw scores for the Anxiety/Depression syndrome. With higher Anxiety/Depression raw scores the estimated probability of past month cigarette use increased. For those with Anxiety/Depression raw scores of 16 (out of 32) the probability of past month cigarette smoking was estimated to be .20. For those with the highest possible raw scores for Anxiety/Depression, the probability of past month smoking was estimated to be .27. The coefficient was positive in five of the analyses—higher Anxiety/Depression scores were associated with elevated scores on substance use indicators. There was no discernible pattern for age, gender, or type of substance. In one instance, however, this relationship was negative—for 14- to 15-year-old males reporting alcohol use.

Similarly, the Thought Problems syndrome was negatively associated with cigarette and alcohol use for 16- to 17-year-old males, although the significance levels were marginal ($p<.10$). The Aggressive Behavior syndrome scale was positively associated with alcohol dependency ($p<.05$) and substance dependency ($p<.10$) for 12- and 13-year-old females. Aggressive Behavior was negatively associated with drug dependency for 16- to 17-year-old males.

Item-level analysis. To study the relationship of syndromes and substance use further, the individual items from the three scales most consistently associated with substance use were examined. Items from the Delinquent Behavior, Social Problems, and Attention Problems scales were used as independent variables in logistic regression analyses to predict use of specific substances, dependency, and need for treatment for the entire sample. Table 4.15 summarizes the results and presents the number of measures of substance use associated with specific items from each of the three syndromes. The table also presents the general direction of the association. For example, the item, "I cut classes or skip school" from the Delinquent Behavior scale was significantly associated with seven substance use indicators. The positive association indicates

that adolescents who report truancy are *more* likely to also report different kinds of substance use, dependence, and need for treatment.

The majority of substance use indicators (cigarette use, alcohol use, marijuana use, alcohol dependence, drug dependence, substance dependence, and need for treatment) were significantly predicted by 10 of the 25 individual items examined. Among these, eight predicted *every* indicator of substance use.

Of the 10 items most predictive of substance use, five concerned forms of deviant behavior from the Delinquency scale: stealing, swearing, cutting classes, hanging around with troublemakers, and running away from home. Adolescents who reported these behaviors were more likely to use substances. The item, "feeling confused or in a fog," from the Attention Problems scale, was also positively associated with all seven indicators of substance abuse. Another item from the Attention Problems scale, "I have trouble sitting still," was positively associated with three measures depicting a serious substance problem. These were Alcohol Dependent, Substance Dependent, and Need Treatment. Four items included in the Social Problems scales were negatively related to substance use. Adolescents who used substances were less likely to acknowledge getting teased, a preference for younger friends, acting too young, or being-overdependent on adults. Nine items were associated with three or fewer substance use indicators, and six items showed no association with any of the substance use indicators.

It should be noted that items appearing in other subscales may significantly predict substance use, especially for specific age-by-gender groups, but further research is required to determine this. The analysis presented here permitted the discovery of items that were most associated with substance abuse in the general sample, from those subscales or constructs that were most predictive of substance use.

4.6 Conclusions

The inclusion of the YSR items on the 1994, 1995, and 1996 NHSDA presented the opportunity to examine the relationship between specific measures of psychological functioning and substance use in a large national probability sample of adolescents aged 12 to 17. Among the eight syndromes measured by the YSR, the three subscales that best predicted substance use were Delinquent Behavior, Social Problems, and Attention Problems. Other identified emotional risk

factors for substance use were dependent on age, gender, or substance use indicator. The findings suggest a complex pattern of psychosocial influences on substance use. Those adolescents who were more likely to use substances reported delinquent *behaviors*, such as stealing, using obscene language, cutting classes or skipping school, hanging around with others who get into trouble, and running away from home. Among reported subjective experiences, an item from the Attention Problems scale, "feeling confused or in a fog," was highly predictive of substance use. In contrast, specific items from the Social Problems scale were *less* likely to be reported by adolescents who use substances. These items generally concerned peer and parental relations: specifically, adolescents who use substances are less likely than their peers who report no substance use to acknowledge getting teased, preferring younger friends, acting too young, or overdependence on adults.

The results suggest that some psychological symptoms are highly associated with substance use among adolescents; however this study was not designed to investigate the association between substance use and specific psychiatric diagnoses. DSM-IV diagnoses (APA, 1994) are not available for these adolescents. Further research is necessary to determine the complex relation of emotional risk factors for substance use among specific subgroups of adolescents. Longitudinal research is necessary to investigate the developmental relationship between emotional and behavioral problems and adolescent substance use.

Table 4.1
Means and Standard Errors for the YSR Syndromes by Age Group and Gender, NHSDA National Sample and Achenbach (1991) Nonclinical Sample

		Males				Females			
		NHSDA			Achenbach	NHSDA			Achenbach
		12-13	14-15	16-17		12-13	14-15	16-17	
	n	2,275	2,375	2,126	536	2,237	2,277	2,277	518
Withdrawn	Mean	2.31	2.40	2.64	3.4	2.91	3.14	3.23	4.0
	S.E	0.06	0.06	0.05	.1	0.06	0.07	0.07	.1
Somatic Complaints	Mean	2.48	2.20	2.04	2.2	3.19	3.58	3.61	3.0
	S.E	0.08	0.07	0.07	.1	0.08	0.09	0.08	.1
Anxious/Depressed	Mean	3.68	3.68	4.00	5.2	5.11	6.04	6.05	6.5
	S.E	0.11	0.10	0.12	.2	0.13	0.14	0.15	.2
Social Problems	Mean	2.67	2.38	2.25	2.7	2.66	2.43	2.18	2.7
	S.E	0.06	0.06	0.05	.1	0.06	0.06	0.05	.1
Thought Problems	Mean	2.52	2.63	2.67	2.3	2.91	3.16	3.13	2.5
	S.E	0.06	0.06	0.06	.1	0.07	0.07	0.07	.1
Attention Problems	Mean	3.88	3.99	3.96	4.7	3.99	4.42	4.29	4.7
	S.E	0.08	0.08	0.08	.1	0.08	0.09	0.09	.1
Delinquent Behavior*	Mean	2.66	3.27	3.39	3.1	2.44	3.23	3.20	2.5
	S.E	0.07	0.06	0.07	.1	0.07	0.07	0.08	.1
Aggressive Behavior	Mean	7.35	7.81	7.65	8.4	7.67	8.48	8.30	8.1
	S.E	0.14	0.13	0.15	.2	0.15	0.14	0.15	.2

Note: The eight syndrome scales of the YSR are formed from scores on the individual items. The syndrome measures are obtained by summing the individual items for each scale.
*The item indicating alcohol and drug use was removed from the Delinquent Behavior scale for all analyses in this chapter.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.2
Interitem Consistency Coefficients (Alpha) for YSR Syndromes by Gender

Scales (Items)	Males		Females	
	NHSDA	Achenbach	NHSDA	Achenbach
Withdrawn (7)	.62	.59	.64	.59
Somatic Complaints (9)	.78	.77	.80	.80
Anxiety/Depression (16)	.82	.86	.86	.90
Social Problems (8)	.53	.68	.57	.68
Thought Problems (7)	.65	.69	.70	.71
Attention Problems (9)	.70	.75	.75	.78
Delinquent Behavior (11)	.70	.76	.74	.76
Aggressive Behavior (19)	.84	.86	.84	.86

Note: Alphas for the Achenbach sample were obtained from Achenbach (1991). Alpha is a measure (from 0 to 1) of the degree to which the items form a reliable theoretical construct.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.3
Correlations Among the YSR Scales for the Entire NHSDA Sample

	Somatic Complaints	Anxious/ Depressed	Social Problems	Thought Problems	Attention Problems	Delinquent Behavior	Aggressive Behavior
Withdrawn	.50	.70	.57	.53	.51	.42	.46
Somatic Complaints		.60	.40	.50	.50	.41	.48
Anxious/ Depressed			.54	.60	.64	.47	.59
Social Problems				.47	.61	.36	.48
Thought Problems					.62	.49	.61
Attention Problems						.53	.66
Delinquent Behavior							.65
Aggressive Behavior							

Note: The correlation coefficients indicate the degree of relationship among the different syndrome scales in the YSR. A higher value indicates a higher degree of relationship between scales.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.4
Correlations Among the YSR Scales for 12- to 13-Year-Old Males (Upper Diagonal) and Females (Lower Diagonal)

	Withdrawn	Somatic Complaints	Anxious/ Depressed	Social Problems	Thought Problems	Attention Problems	Delinquent Behavior	Aggressive Behavior
Withdrawn		.44	.70	.62	.56	.51	.47	.52
Somatic Complaints	.53		.57	.44	.45	.48	.41	.46
Anxious/ Depressed	.70	.59		.63	.61	.64	.53	.65
Social Problems	.61	.43	.58		.52	.66	.42	.55
Thought Problems	.54	.54	.61	.50		.63	.45	.62
Attention Problems	.55	.53	.68	.64	.64		.51	.69
Delinquent Behavior	.47	.50	.53	.41	.51	.55		.66
Aggressive Behavior	.49	.51	.63	.53	.64	.67	.66	

Note: Entries are Pearson Product Moment Correlations. The correlation coefficients indicate the degree of relationship among the different YSR syndrome scales for 12- to 13-year-old males and females.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.5
Correlations Among the YSR Scales for 14- to 15-Year-Old Males (Upper Diagonal) and Females (Lower Diagonal)

	Withdrawn	Somatic Complaints	Anxious/ Depressed	Social Problems	Thought Problems	Attention Problems	Delinquent Behavior	Aggressive Behavior
Withdrawn		.50	.67	.59	.51	.49	.39	.42
Somatic Complaints	.52		.58	.43	.51	.51	.38	.47
Anxious/ Depressed	.70	.63		.56	.58	.63	.45	.56
Social Problems	.58	.40	.55		.47	.60	.35	.48
Thought Problems	.52	.54	.63	.46		.60	.47	.58
Attention Problems	.52	.53	.68	.60	.63		.53	.66
Delinquent Behavior	.42	.49	.50	.35	.56	.53		.65
Aggressive Behavior	.44	.54	.59	.47	.61	.66	.66	

Note: Entries are Pearson Product Moment Correlations. The correlation coefficients indicate the degree of relationship among the different YSR syndrome scales for 14- to 15-year-old males and females.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.6
Correlations Among the YSR Scales for 16- to 17-Year-Old Males (Upper Diagonal) and Females (Lower Diagonal)

	Withdrawn	Somatic Complaints	Anxious/ Depressed	Social Problems	Thought Problems	Attention Problems	Delinquent Behavior	Aggressive Behavior
Withdrawn		.45	.68	.57	.50	.49	.41	.41
Somatic Complaints	.49		.53	.36	.45	.44	.37	.41
Anxious/ Depressed	.69	.59		.54	.55	.61	.46	.54
Social Problems	.54	.38	.51		.45	.59	.38	.44
Thought Problems	.51	.47	.58	.46		.61	.49	.58
Attention Problems	.50	.51	.65	.58	.61		.53	.64
Delinquent Behavior	.43	.42	.47	.36	.48	.55		.62
Aggressive Behavior	.42	.49	.58	.46	.58	.62	.66	

Note: Entries are Pearson Product Moment Correlations. The correlation coefficients indicate the degree of relationship among the different YSR syndrome scales for 16- to 17-year-old males and females.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.7
Mean and Median Correlations Among the Syndrome Scales by Age and Gender

	Male		Female	
Age Group	**Mean**	**Median**	**Mean**	**Median**
12-13	.55	.54	.56	.54
14-15	.52	.51	.55	.54
16-17	.50	.50	.52	.51

Note: The table summarizes the overall degree of relationship among the eight different YSR syndrome scales by presenting mean and median correlations for each age and gender group.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.8
Results for Logistic Regression of YSR Scales on Any Past Month Cigarette Smoking, Overall and by Age Group and Gender

		All	Males			Females		
	Age	12-17	12-13	14-15	16-17	12-13	14-15	16-17
	n	13,567	2,275	2,375	2,126	2,237	2,277	2,277
Intercept	Coef.	-2.40	-3.16	-2.25	-1.67	-3.59	-2.73	-1.96
	S.E.	0.06	0.19	0.15	0.13	0.23	0.17	0.15
Withdrawn	Coef.	-0.08	-0.09	-0.13	-0.10	-0.04	-0.07	-0.15
	S.E.	0.02	0.07	0.05	0.04	0.06	0.04	0.04
Somatic Complaints	Coef.	-0.00	-0.06	0.08	-0.01	0.01	-0.03	0.03
	S.E.	0.01	0.04	0.03	0.03	0.04	0.03	0.02
Anxious/ Depressed	Coef.	0.02	-0.06	-0.01	0.02	0.01	0.01	0.04
	S.E.	0.01	0.04	0.03	0.02	0.03	0.02	0.02
Social Problems	Coef.	-0.14	-0.19	-0.01	-0.04	-0.18	-0.13	-0.12
	S.E.	0.02	0.07	0.05	0.04	0.07	0.05	0.05
Thought Problems	Coef.	-0.03	0.07	-0.07	-0.09	-0.07	0.01	-0.03
	S.E.	0.02	0.05	0.04	0.04	0.06	0.05	0.04
Attention Problems	Coef.	0.08	0.12	0.03	0.07	0.10	0.12	0.08
	S.E.	0.01	0.04	0.04	0.03	0.06	0.04	0.03
Delinquent Behavior	Coef.	0.31	0.28	0.28	0.27	0.40	0.31	0.32
	S.E.	0.01	0.04	0.03	0.03	0.05	0.03	0.03
Aggressive Behavior	Coef.	0.01	0.04	0.00	0.02	0.03	0.02	-0.01
	S.E.	0.01	0.03	0.02	0.02	0.03	0.02	0.02

Note: Logistic regression analysis was used to determine whether scores from the YSR Scales are predictive of past month cigarette smoking. The analyses were conducted for the entire sample and then separately for each of the six different age and gender groups: 12-13, 14-15, and 16- to 17-year-old males and 12-13, 14-15, and 16- to 17-year-old females. Each of these seven models included the eight YSR Scales as continuous independent variables.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.9
Results for Logistic Regression of YSR Scales on Any Past Month Alcohol Use, Overall and by Age Group and Gender

		All	Males			Females		
	Age	**12-17**	**12-13**	**14-15**	**16-17**	**12-13**	**14-15**	**16-17**
	n	**13,567**	**2,275**	**2,375**	**2,126**	**2,237**	**2,277**	**2,277**
Intercept	Coef.	-2.13	-3.19	-2.22	-1.14	-3.79	-2.40	-1.60
	S.E.	0.06	0.19	0.13	0.11	0.26	0.13	0.13
Withdrawn	Coef.	-0.03	-0.06	0.02	-0.15	0.12	-0.02	-0.11
	S.E.	0.02	0.09	0.04	0.04	0.08	0.04	0.04
Somatic Complaints	Coef.	0.02	0.02	0.03	0.01	-0.01	0.06	0.06
	S.E.	0.01	0.04	0.03	0.03	0.05	0.03	0.02
Anxious/ Depressed	Coef.	0.00	-0.07	-0.07	0.05	-0.04	0.01	0.00
	S.E.	0.01	0.05	0.03	0.03	0.05	0.02	0.02
Social Problems	Coef.	-0.18	-0.21	-0.17	-0.07	-0.26	-0.12	-0.10
	S.E.	0.02	0.08	0.04	0.04	0.07	0.04	0.05
Thought Problems	Coef.	-0.03	0.05	-0.00	-0.16	0.02	-0.02	0.01
	S.E.	0.02	0.05	0.04	0.04	0.08	0.04	0.04
Attention Problems	Coef.	0.05	0.04	0.06	0.02	0.04	0.03	0.05
	S.E.	0.02	0.05	0.03	0.03	0.06	0.03	0.03
Delinquent Behavior	Coef.	0.29	0.33	0.27	0.29	0.37	0.27	0.23
	S.E.	0.01	0.06	0.03	0.03	0.05	0.03	0.03
Aggressive Behavior	Coef.	0.01	0.02	0.01	0.03	0.02	0.02	0.01
	S.E.	0.01	0.03	0.02	0.02	0.03	0.02	0.02

Note: Logistic regression analysis was used to determine whether scores from the YSR Scales are predictive of past month alcohol use. The analyses were conducted for the entire sample and then separately for each of the six different age and gender groups: 12-13, 14-15, and 16- to17-year-old males and 12-13, 14-15, and 16- to17-year-old females. Each of these seven models included the eight YSR Scales as continuous independent variables.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.10
Results for Logistic Regression of YSR Scales on Any Past Month Marijuana Use for the Entire Sample and by Age Group and Gender

		All	Males			Females		
	Age	12-17	12-13	14-15	16-17	12-13	14-15	16-17
	n	13,567	2,275	2,375	2,126	2,237	2,277	2,277
Intercept	Coef.	-3.60	-4.67	-3.88	-2.56	-6.37	-4.12	-3.24
	S.E.	0.09	0.31	0.22	0.18	0.41	0.29	0.17
Withdrawn	Coef.	-0.01	-0.21	-0.02	-0.01	-0.14	-0.07	0.01
	S.E.	0.02	0.14	0.06	0.05	0.16	0.05	0.06
Somatic Complaints	Coef.	-0.02	-0.02	-0.03	0.04	-0.12	0.01	-0.03
	S.E.	0.02	0.08	0.04	0.04	0.07	0.06	0.03
Anxious/ Depressed	Coef.	-0.00	-0.03	-0.04	-0.00	0.15	0.01	-0.04
	S.E.	0.02	0.07	0.04	0.03	0.08	0.03	0.02
Social Problems	Coef.	-0.21	-0.20	-0.21	-0.15	-0.51	-0.17	-0.09
	S.E.	0.03	0.15	0.06	0.05	0.16	0.07	0.06
Thought Problems	Coef.	-0.03	0.07	-0.06	-0.06	-0.08	-0.03	0.00
	S.E.	0.03	0.08	0.06	0.05	0.13	0.07	0.05
Attention Problems	Coef.	0.08	0.07	0.16	0.04	0.02	0.03	0.08
	S.E.	0.02	0.08	0.05	0.04	0.16	0.05	0.05
Delinquent Behavior	Coef.	0.37	0.49	0.39	0.32	0.51	0.37	0.31
	S.E.	0.02	0.09	0.04	0.04	0.08	0.05	0.04
Aggressive Behavior	Coef.	-0.01	-0.05	-0.03	-0.02	0.10	0.04	0.00
	S.E.	0.01	0.06	0.02	0.02	0.07	0.04	0.02

Note: Logistic regression analysis was used to determine whether scores from the YSR Scales are predictive of past month marijuana use. The analyses were conducted for the entire sample and then separately for each of the six different age and gender groups: 12-13, 14-15, and 16- to 17-year-old males and 12-13, 14-15, and 16- to 17-year-old females. Each of these seven models included the eight YSR Scales as continuous independent variables.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.11
Results for Logistic Regression of YSR Scales on Alcohol Dependency Indicator, for the Entire Sample and by Age Group and Gender

		All	Males			Females		
	Age	12-17	12-13	14-15	16-17	12-13	14-15	16-17
	n	13,567	2,275	2,375	2,126	2,237	2,277	2,277
Intercept	Coef.	-4.41	-6.20	-4.69	-3.60	-6.60	-4.71	-3.85
	S.E.	0.11	0.41	0.33	0.22	0.43	0.26	0.24
Withdrawn	Coef.	-0.06	-0.25	-0.06	-0.08	-0.04	-0.00	-0.14
	S.E.	0.03	0.21	0.09	0.07	0.12	0.06	0.07
Somatic Complaints	Coef.	0.05	0.10	-0.04	0.04	0.11	-0.02	0.11
	S.E.	0.02	0.10	0.06	0.04	0.08	0.05	0.03
Anxious/ Depressed	Coef.	0.02	0.19	-0.04	0.03	0.01	0.03	-0.00
	S.E.	0.02	0.09	0.05	0.04	0.06	0.03	0.03
Social Problems	Coef.	-0.25	-0.42	-0.11	-0.08	-0.51	-0.27	-0.21
	S.E.	0.03	0.16	0.09	0.05	0.12	0.09	0.06
Thought Problems	Coef.	-0.00	-0.00	0.06	-0.10	0.13	0.05	-0.01
	S.E.	0.03	0.12	0.06	0.06	0.09	0.06	0.06
Attention Problems	Coef.	0.10	-0.01	0.06	0.08	0.02	0.07	0.15
	S.E.	0.03	0.09	0.07	0.05	0.09	0.06	0.05
Delinquent Behavior	Coef.	0.29	0.34	0.31	0.24	0.20	0.28	0.35
	S.E.	0.02	0.10	0.04	0.04	0.06	0.05	0.05
Aggressive Behavior	Coef.	0.01	0.04	0.01	0.02	0.15	0.05	-0.03
	S.E.	0.01	0.05	0.03	0.03	0.07	0.03	0.03

Note: Logistic regression analysis was used to determine whether scores from the YSR Scales are predictive of alcohol dependency. The analyses were conducted for the entire sample and then separately for each of the six different age and gender groups: 12-13, 14-15, and 16- to 17-year-old males and 12-13, 14-15, and 16- to 17-year-old females. Each of these seven models included the eight YSR Scales as continuous independent variables.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.12
Results for Logistic Regression of YSR Scales on Drug Dependency Indicator, for the Entire Sample and by Age Group and Gender

		All	Males			Females		
	Age	12-17	12-13	14-15	16-17	12-13	14-15	16-17
	n	13,567	2,275	2,375	2,126	2,237	2,277	2,277
Intercept	Coef.	-4.82	-5.76	-4.94	-4.03	-7.27	-5.43	-4.45
	S.E.	0.15	0.47	0.35	0.28	0.58	0.38	0.28
Withdrawn	Coef.	0.01	-0.09	0.12	-0.04	-0.07	0.02	-0.09
	S.E.	0.04	0.19	0.09	0.06	0.14	0.08	0.07
Somatic Complaints	Coef.	-0.02	-0.26	0.04	-0.07	0.02	0.01	0.04
	S.E.	0.02	0.16	0.06	0.06	0.07	0.06	0.05
Anxious/ Depressed	Coef.	0.01	0.03	-0.05	0.06	0.13	0.01	-0.05
	S.E.	0.02	0.06	0.05	0.05	0.07	0.04	0.04
Social Problems	Coef.	-0.22	0.03	-0.26	-0.09	-0.60	-0.23	-0.11
	S.E.	0.03	0.18	0.10	0.06	0.18	0.08	0.07
Thought Problems	Coef.	-0.02	0.00	-0.03	-0.06	-0.03	0.07	-0.03
	S.E.	0.03	0.22	0.08	0.07	0.11	0.07	0.07
Attention Problems	Coef.	0.09	0.07	0.08	0.09	-0.12	0.05	0.10
	S.E.	0.03	0.17	0.06	0.06	0.10	0.06	0.05
Delinquent Behavior	Coef.	0.39	0.43	0.36	0.41	0.42	0.32	0.43
	S.E.	0.02	0.11	0.05	0.05	0.12	0.06	0.07
Aggressive Behavior	Coef.	-0.02	-0.13	0.00	-0.07	0.17	0.02	-0.00
	S.E.	0.01	0.09	0.03	0.03	0.09	0.03	0.03

Note: Logistic regression analysis was used to determine whether scores from the YSR Scales are predictive of drug dependency. The analyses were conducted for the entire sample and then separately for each of the six different age and gender groups: 12-13, 14-15, and 16- to 17-year-old males and 12-13, 14-15, and 16- to 17-year-old females. Each of these seven models included the eight YSR Scales as continuous independent variables.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.13
Results for Logistic Regression of YSR Scales on Substance Dependency Indicator, for the Entire Sample and by Age Group and Gender

		All	Males			Females		
	Age	12-17	12-13	14-15	16-17	12-13	14-15	16-17
	n	13,567	2,275	2,375	2,126	2,237	2,277	2,277
Intercept	Coef.	-4.14	-5.62	-4.30	-3.30	-6.36	-4.51	-3.69
	S.E.	0.11	0.35	0.25	0.20	0.38	0.26	0.24
Withdrawn	Coef.	-0.03	-0.20	0.00	-0.08	0.00	0.02	-0.12
	S.E.	0.03	0.19	0.08	0.06	0.10	0.05	0.06
Somatic Complaints	Coef.	0.03	0.04	0.03	0.02	0.12	0.00	0.08
	S.E.	0.02	0.09	0.05	0.04	0.06	0.04	0.03
Anxious/ Depressed	Coef.	0.02	0.14	-0.04	0.06	0.05	0.02	-0.03
	S.E.	0.02	0.06	0.04	0.04	0.05	0.03	0.03
Social Problems	Coef.	-0.26	-0.31	-0.15	-0.12	-0.60	-0.28	-0.21
	S.E.	0.03	0.14	0.07	0.05	0.13	0.07	0.06
Thought Problems	Coef.	-0.00	-0.01	0.01	-0.09	0.12	0.03	0.02
	S.E.	0.02	0.13	0.06	0.05	0.08	0.05	0.05
Attention Problems	Coef.	0.10	0.05	0.08	0.07	-0.02	0.08	0.15
	S.E.	0.02	0.11	0.05	0.05	0.08	0.05	0.05
Delinquent Behavior	Coef.	0.34	0.38	0.32	0.32	0.31	0.30	0.39
	S.E.	0.02	0.10	0.04	0.04	0.07	0.04	0.06
Aggressive Behavior	Coef.	0.00	-0.02	0.01	-0.00	0.11	0.04	-0.02
	S.E.	0.01	0.05	0.03	0.02	0.06	0.03	0.03

Note: Logistic regression analysis was used to determine whether scores from the YSR Scales are predictive of substance (either alcohol or illicit drug) dependency. The analyses were conducted for the entire sample and then separately for each of the six different age and gender groups: 12-13, 14-15, and 16- to 17-year-old males and 12-13, 14-15, and 16- to 17-year-old females. Each of these seven models included the eight YSR Scales as continuous independent variables.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.14
Results for Logistic Regression of YSR Scales on Need for Illicit Drug Abuse Treatment Indicator, for the Entire Sample and by Age Group and Gender

		All	Males			Females		
	Age	12-17	12-13	14-15	16-17	12-13	14-15	16-17
	n	13,567	2,275	2,375	2,126	2,237	2,277	2,277
Intercept	Coef.	-4.52	-5.24	-4.65	-3.98	-6.01	-4.69	-4.21
	S.E.	0.13	0.38	0.31	0.28	0.44	0.32	0.30
Withdrawn	Coef.	0.01	-0.11	0.09	0.00	-0.04	0.02	-0.09
	S.E.	0.03	0.14	0.08	0.06	0.09	0.07	0.07
Somatic Complaints	Coef.	-0.02	-0.20	0.06	-0.06	-0.06	0.04	0.03
	S.E.	0.02	0.10	0.05	0.05	0.07	0.05	0.04
Anxious/ Depressed	Coef.	0.02	0.08	-0.04	0.05	0.08	0.04	-0.01
	S.E.	0.02	0.06	0.04	0.05	0.05	0.04	0.03
Social Problems	Coef.	-0.21	-0.20	-0.23	-0.10	-0.45	-0.18	-0.11
	S.E.	0.03	0.14	0.10	0.06	0.12	0.07	0.06
Thought Problems	Coef.	-0.00	-0.06	-0.03	-0.03	-0.02	0.09	0.02
	S.E.	0.03	0.12	0.07	0.06	0.09	0.07	0.06
Attention Problems	Coef.	0.07	0.17	0.08	0.03	0.12	-0.05	0.08
	S.E.	0.03	0.12	0.05	0.05	0.09	0.06	0.05
Delinquent Behavior	Coef.	0.37	0.35	0.30	0.41	0.42	0.28	0.43
	S.E.	0.02	0.07	0.05	0.05	0.07	0.06	0.05
Aggressive Behavior	Coef.	-0.01	-0.00	0.03	-0.03	0.06	0.01	-0.01
	S.E.	0.01	0.07	0.04	0.03	0.06	0.03	0.03

Note: Logistic regression analysis was used to determine whether scores from the Youth Self-Report Scales are predictive of illicit drug abuse treatment. The analyses were conducted for the entire sample and then separately for each of the six different age and gender groups: 12-13, 14-15, and 16- to 17-year-old males and 12-13, 14-15, and 16- to 17-year-old females. Each of these seven models included the eight YSR Scales as continuous independent variables.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table 4.15
YSR Items from Three Syndromes that Significantly Predict Substance Use

	Cigarette Use	Alcohol Use	Marijuana Use	Alcohol Dependent	Drug Dependent	Substance Dependent	Need Treatment	Total Substance Use Measures
Attention Problems								
I Feel Confused or in a Fog	p	p	p	p	p	p	p	7
I Act Too Young For My Age*	n	n	n	n	n	n	n	7
I Have Trouble Sitting Still				p		p	p	3
My School Work Is Poor	p	p						2
I Have Trouble Concentrating...	p							1
I Act Without Stopping to Think		n						1
I Am Nervous or Tense								0
I Daydream a Lot								0
I Am Poorly Coordinated or Clumsy*								0
Delinquent Behavior								
I Steal From Places Other Than Home	p	p	p	p	p	p	p	7
I Swear or Use Dirty Language	p	p	p	p	p	p	p	7
I Cut Classes or Skip School	p	p	p	p	p	p	p	7
I Hang Around With Kids Who Get in Trouble	p	p	p	p	p	p	p	7
I Run Away From Home	p		p	p	p	p	p	6
I Would Rather Be With Older Kids Than Kids My Own Age	p	p		p				3
I Don't Feel Guilty After Doing Something I Shouldn't					p		p	2
I Steal at Home							p	1
I Lie or Cheat	n							1
I Set Fires								0

Table 4.15
YSR Items from Three Syndromes that Significantly Predict Substance Use (Continued)

	Cigarette Use	Alcohol Use	Marijuana Use	Alcohol Dependent	Drug Dependent	Substance Dependent	Need Treatment	Total Substance Use Measures
Social Problems								
I Get Teased a Lot	n	n	n	n	n	n	n	7
I Would Rather Be With Younger Kids Than Kids My Own Age	n	n	n	n	n	n	n	7
I'm Too Dependent on Adults	n		n			n	n	4
I Don't Get Along With Other Kids				n				1
I Am Not Liked by Other Kids								0
I Keep From Getting Involved With Others								0
Total Items	14	11	10	12	10	11	13	

Note: The table presents the number of substance use measures associated with specific items from the three YSR syndromes most closely associated with substance use. The table also presents the general direction of the association. p denotes a positively predictive association. n denotes a negatively predictive association. For example, the item "I cut classes or skip school" from the Delinquent Behaviors scale was significantly associated with seven substance use indicators. The positive association indicates that adolescents who report truancy are also likely to report different kinds of substance use, dependence, and need for treatment. This table is based on seven separate logistic regression models (one for each substance use measure). Each model included all 25 of the YSR items as independent variables, each with values of 0 and 1.
*Item also appears in Social Problems scale.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

81

82

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83

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Appendix A

Standard Error Tables

Table A3.1
Standard Errors for Percent Using Drug and Alcohol by Gender and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Cigarettes- past month	0.5	0.8	1.0	1.2	0.8	1.0	1.2
Alcohol - past month	0.5	0.8	1.1	1.3	0.7	1.1	1.3
Any illicit drug	0.3	0.5	0.7	1.0	0.4	0.9	0.9
Marijuana - past month	0.3	0.4	0.7	1.0	0.3	0.7	0.8
Other illicit - past month	0.2	0.4	0.5	0.6	0.4	0.5	0.6
Alcohol - binge drinking	0.3	0.3	0.7	1.0	0.3	0.7	1.0
Alcohol - drunk past year	0.4	0.3	0.7	1.1	0.4	0.8	1.1
Cigarettes almost daily	0.3	0.2	0.5	0.9	0.3	0.5	1.0
Dependent on alcohol or illicit drugs	0.3	0.3	0.5	0.9	0.3	0.6	0.8
Alcohol dependence	0.2	0.2	0.5	0.7	0.3	0.5	0.8
Illicit drug dependence	0.2	0.1	0.5	0.6	0.2	0.4	0.7
Need treatment	0.2	0.3	0.6	0.7	0.4	0.5	0.7

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.2
Standard Errors for Percentages of Adolescents with Emotional and Behavioral Problems, by Gender and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Emotional Problem	0.4	0.9	0.9	0.8	0.8	1.1	0.9
Behavioral Problem	0.4	0.8	0.8	0.9	1.0	1.1	1.1

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.3
Standard Errors for Percentages of Adolescents Aged 12 to 17 Using Cigarettes in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	0.5	0.8	1.0	1.2	0.8	1.0	1.2
Emotional Problems:							
High	1.4	2.1	3.0	3.4	3.6	3.1	3.2
Intermediate	0.9	1.5	1.7	1.7	1.6	2.0	2.0
Low	0.5	1.1	1.4	1.7	0.9	1.3	1.6
Behavioral Problems:							
High	1.4	2.9	3.3	3.6	3.2	2.8	3.1
Intermediate	0.8	1.6	1.6	2.0	1.8	2.3	2.2
Low	0.5	0.7	1.4	1.4	0.7	1.2	1.5

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.3a
Standard Errors for Percentages of Adolescents Aged 12 to 17 Using Cigarettes Daily or Almost Daily in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**0.3**	**0.2**	**0.5**	**0.9**	**0.3**	**0.5**	**1.0**
Emotional Problems:							
High	**0.9**	0.5	1.4	2.5	0.7	1.8	2.7
Intermediate	**0.5**	0.2	0.9	1.4	0.7	0.9	1.5
Low	**0.3**	0.2	0.6	1.3	0.1	0.7	1.1
Behavioral Problems:							
High	**1.1**	0.4	1.8	3.4	1.5	1.5	2.4
Intermediate	0.4	0.2	0.8	1.5	0.2	0.9	1.7
Low	**0.3**	0.2	0.6	1.1	0.1	0.6	0.9

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.4
Standard Errors for Percentages of Adolescents Aged 12 to 17 Using Alcohol in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	0.5	0.8	1.1	1.3	0.7	1.1	1.3
Emotional Problems:							
High	1.3	2.6	2.6	3.4	2.5	3.3	2.9
Intermediate	0.7	1.2	1.9	1.9	1.8	1.9	2.1
Low	0.6	1.0	1.3	1.7	0.7	1.2	1.6
Behavioral Problems:							
High	1.1	3.1	3.4	3.2	2.7	2.6	2.7
Intermediate	0.8	1.5	1.8	2.2	1.5	1.8	2.4
Low	0.6	0.8	1.3	1.6	0.6	1.3	1.5

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.4a
Standard Errors of the Percentages of Adolescents Aged 12 to 17 Binge Drinking in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**0.3**	**0.3**	**0.7**	**1.0**	**0.3**	**0.7**	**1.0**
Emotional Problems:							
High	**0.9**	1.3	2.0	2.8	1.1	2.3	2.3
Intermediate	**0.5**	0.6	1.3	1.7	0.7	1.3	1.5
Low	**0.3**	0.4	0.9	1.4	0.3	0.7	1.1
Behavioral Problems:							
High	**1.0**	1.5	2.4	3.0	1.4	2.4	2.5
Intermediate	**0.5**	0.5	1.1	1.8	0.8	1.0	1.7
Low	**0.3**	0.4	0.8	1.1	0.1	0.6	0.9

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.4b
Standard Errors of the Percentages of Adolescents Aged 12 to 17 Drunk Three or more Times in the Past Year, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	0.4	0.3	0.7	1.1	0.4	0.8	1.1
Emotional Problems:							
High	1.2	1.4	2.2	3.2	1.5	2.7	2.9
Intermediate	0.6	0.5	1.3	1.8	1.0	1.4	1.9
Low	0.4	0.4	1.0	1.6	0.3	0.9	1.3
Behavioral Problems:							
High	1.2	1.7	2.6	3.1	1.8	2.3	2.7
Intermediate	0.7	0.6	1.4	2.0	1.1	1.6	2.2
Low	0.3	0.3	0.8	1.3	0.2	0.6	1.0

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.4c
Standard Errors of the Percentages of Adolescents Aged 12 to 17 Dependent on Alcohol, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	0.2	0.2	0.5	0.7	0.3	0.5	0.8
Emotional Problems:							
High	0.8	1.2	1.8	2.7	1.9	1.8	2.4
Intermediate	0.5	0.4	1.0	1.3	0.5	1.1	1.5
Low	0.2	0.1	0.4	0.8	0.1	0.5	0.8
Behavioral Problems:							
High	1.0	1.5	2.2	2.8	1.5	1.9	2.5
Intermediate	0.4	0.3	0.6	1.2	0.4	1.1	1.4
Low	0.2	0.1	0.5	0.7	0.1	0.4	0.6

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.5
Standard Errors of the Percentages of Adolescents Aged 12 to 17 Using Marijuana in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	0.3	0.4	0.7	1.0	0.3	0.7	0.8
Emotional Problems:							
High	0.9	1.1	2.0	2.8	1.9	2.2	2.4
Intermediate	0.5	0.6	1.2	1.4	0.6	1.4	1.4
Low	0.3	0.5	0.8	1.3	0.2	0.9	0.9
Behavioral Problems:							
High	1.1	1.7	2.8	2.8	1.8	2.1	2.2
Intermediate	0.6	0.6	1.0	1.7	0.5	1.3	1.7
Low	0.3	0.4	0.7	1.1	0.0	0.6	0.8

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.6
Standard Errors of the Percentages of Adolescents Aged 12 to 17 Using Illicit Drugs Other Than Marijuana in the Past Month, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	0.2	0.4	0.5	0.6	0.4	0.5	0.6
Emotional Problems:							
High	0.9	1.3	2.0	2.2	2.3	2.2	1.7
Intermediate	0.4	0.8	1.0	1.3	0.7	1.0	1.2
Low	0.2	0.5	0.6	0.7	0.3	0.4	0.7
Behavioral Problems:							
High	0.9	2.0	2.6	2.1	2.0	1.6	2.1
Intermediate	0.4	0.7	0.6	1.2	0.6	1.2	1.2
Low	0.2	0.3	0.6	0.7	0.2	0.3	0.6

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.6a
Standard Errors of the Percentages of Adolescents Aged 12 to 17 Dependent on Illicit Drugs, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	**0.2**	**0.1**	**0.5**	**0.6**	**0.2**	**0.4**	**0.7**
Emotional Problems:							
High	**0.8**	0.5	1.6	2.1	1.6	2.0	1.9
Intermediate	**0.4**	0.2	0.9	1.2	0.5	0.8	1.2
Low	**0.2**	0.2	0.4	0.6	0.2	0.4	0.7
Behavioral Problems:							
High	**0.8**	0.2	1.9	2.1	1.4	1.5	2.0
Intermediate	**0.3**	0.3	0.7	1.2	0.4	0.7	1.0
Low	**0.2**	0.2	0.5	0.5	0.0	0.3	0.5

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.6b
Standard Errors of the Percentages of Adolescents Aged 12 to 17 in Need of Illicit Drug Abuse Treatment, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	0.2	0.3	0.6	0.7	0.4	0.5	0.7
Emotional Problems:							
High	0.9	1.1	2.1	2.5	2.2	2.1	2.5
Intermediate	0.5	0.7	1.0	1.3	0.6	1.0	1.4
Low	0.2	0.4	0.5	0.7	0.4	0.5	0.8
Behavioral Problems:							
High	1.0	2.0	2.5	2.8	2.0	1.7	2.5
Intermediate	0.4	0.6	0.8	1.2	0.7	0.9	1.1
Low	0.2	0.2	0.5	0.6	0.2	0.4	0.6

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Table A3.7
Standard Errors of the Percentages of Adolescents Aged 12 to 17 Dependent on Alcohol or Illicit Drugs, by Emotional and Behavioral Problem Scores, Gender, and Age (12-13, 14-15, 16-17), 1994-1996

	Group						
		Males			Females		
	Total	12-13	14-15	16-17	12-13	14-15	16-17
Total Population	0.3	0.3	0.5	0.9	0.3	0.6	0.8
Emotional Problems:							
High	1.0	1.2	2.1	3.0	2.4	2.1	2.3
Intermediate	0.6	0.5	1.2	1.6	0.6	1.3	1.6
Low	0.2	0.2	0.5	0.9	0.2	0.6	0.9
Behavioral Problems:							
High	1.1	1.5	2.4	3.1	1.9	2.1	2.4
Intermediate	0.5	0.3	0.7	1.6	0.5	1.2	1.6
Low	0.2	0.2	0.6	0.8	0.1	0.5	0.7

Note: High: adolescents with significant psychological distress (borderline clinical or clinical levels, Achenbach, 1991); Intermediate: adolescents who scored above the median among adolescents surveyed in NHSDA, but below the Achenbach borderline cutoff; Low: adolescents who were below the median among adolescents surveyed in NHSDA.

Source: Office of Applied Studies, SAMHSA, National Household Survey on Drug Abuse, 1994-1996.

Appendix B

Data and Methods

APPENDIX B: Data and Methods

This appendix discusses sample weighting, statistical tests, and suppression of estimates due to low precision. This report presents estimates of the percents of persons aged 12 to 17 in the total NHSDA target population and in age and gender groups who used substances, weré dependent, or needed illicit drug abuse treatment during specified time periods preceding the interview. The estimates of this report are based on sample survey data rather than on complete data for the population. This implies that the estimates must be weighted to take into account the complex sample design of the NHSDA. All estimates presented in this report are weighted to take into account the complex sampling design of the NHSDA. The basic sampling weights of each annual NHSDA are equal to the inverses of the probabilities of selection of sample respondents. In other words, the smaller a respondent's chance of entering the sample, the larger the weight of that respondent in the calculation of unbiased estimates for the target population. To obtain the final NHSDA weights, the basic sampling weights are adjusted to reflect household-level and individual-level nonresponse and further adjusted to ensure consistency with U.S. census population totals. Thus, the estimates presented in this report are unbiased estimates for the U.S. civilian, noninstitutionalized population aged 12 and older or for specified subgroups of that target population. (For details of NHSDA weighting, see SAMHSA, 1998, Appendix D.)

All comparisons, as well as the individual rates themselves, are subject to sampling error that is readily quantified. Sampling error for an individual rate results from asking questions of a sample rather than of everyone in the surveyed population. Estimates in this report were rounded to the nearest tenth of one percent and tested to confirm that they met a required level of statistical precision. Estimated percents were considered to be of low precision if the standard error of the estimate was greater than 17.5 percent of the log transformation of the estimate. Low precision typically occurs for small subgroups when percents are close to zero or 100, but the large combined sample size of the 1994-B-1995-1996 NHSDAs ensured that few estimates had to be suppressed because of low precision. Estimates that were suppressed because of low precision are noted using asterisks in the text tables of this report.

Sampling theory provides the basis for calculating confidence intervals around the estimates and tests of significance in comparing two estimates. The size of the intervals and the tests of significance depend on: sample size; the interaction between the sampling procedure used and the

distribution of a particular variable in the population, that is, the appropriate design effect; and the degree of confidence required in the interval estimate, or level of protection against incorrect inferences, required in the test of significance.

This report presents results of statistical significance tests for comparisons of subgroups defined by gender, age, and severity of emotional or behavioral problems. Differences between groups in prevalence and frequency of substance use, rates of dependence and treatment for drug use were tested for statistical significance using *t* tests. The *t* test takes into account the sizes of the subsamples being compared and the degree of variation among sample members. An observed sample difference is designated as "statistically significant" if the probability of a sample difference equal to or larger than the observed sample difference is less than or equal to a given significance level, usually .05. Because of the large number of comparisons in this report, a more conservative significance level was adopted. Differences discussed in the text were statistically significant at the .001 level or lower.

The appendix tables present standard errors for all estimates that are presented in Chapter 3 of this report. A test statistic can be computed using the estimates reported in any text table and the standard errors reported in the corresponding standard error table of the appendix. Like the estimates themselves, the standard errors of these estimates fully take into account the complex sampling design of the NHSDA. In particular, the variance estimation software (SUDAAN) used the method of Taylor Series linearization to adjust all standard errors for correlations between observations due to the multistage sample design of NHSDA. (See SAMHSA, 1998, Appendix D for details of the NHSDA sample design and variance estimation methodology.)

The standard error tables have the same formats as the text tables for which they provide statistical documentation. The appendix table presenting the standard errors for estimates shown in a specified text table has the same number as the text table except for the prefix "A." For example, appendix table A3.1 presents the standard errors for the estimates show in text table 3.1.

Nonsampling error, which includes nonresponse, misreporting, and miscoding, cannot be measured as satisfactorily as sampling error. A series of studies on the validity and reliability of general population survey data are reported elsewhere (see Turner, Lessler, and Gfroerer, 1992).

Chapter 4 displays the results of logistic regression analyses. Specifically, logistic regression models were used to determine whether specific measures of psychological functioning are associated with measures of substance use. In order to assess correlates of substance use and

variables that mediate the relationship between psychological functioning and substance use, we analyze the logistic regression models in Chapter 4 separately for males and females for each of the three age groups. Consistent with recent statistical advice on the use of weights in regression analysis (e.g., Winship and Radbill, 1994), the estimates of Chapter 4 use weighted data, in which estimates are weighted to take into account the complex sample design of the NHSDA, rather than unweighted data. It is important to use weighted data in order that the logistic regression estimates will gauge the average effects of factors affecting adolescent substance use in the NHSDA target population. The precise method of statistical estimation applied in these logistic regression analyses is called "weighted maximum likelihood estimation." The estimation method is implemented in the computer program SUDAAN and discussed in Shah et al. (1995).

Limitations and Methodological Issues

The NHSDA is the only survey that regularly produces estimates of drug use among members of the civilian, non-institutionalized population aged 12 and older of the United States. The survey is an appropriate vehicle for estimating prevalence of use for cigarettes, alcohol, and other illicit drugs because it reports use of various substances that does not ordinarily come to the attention of administrative, medical, or correctional authorities. In-person interviews with a large national probability sample are the best way to estimate drug use in the general population of the United States.

Although the NHSDA is useful for many purposes, it has certain limitations. First, the data are based on self-reports of drug use, and their value thus depends on respondents' truthfulness and memory. The validity of self-report drug use data has been established in previous research (see Turner, Lessler, and Gfroerer, 1992). The NHSDA procedures encourage honesty and recall. Nevertheless, some under- and overreporting may have occurred. Second, because the population of the survey is defined as the civilian, noninstitutionalized population of the United States, a small proportion (less than 2 percent) of the population is excluded: those living in institutional group quarters (e.g., prisons, nursing homes, treatment centers), those with no permanent residence (e.g., homeless people), and active military personnel. As a result, estimates of substance use derived from the NHSDA may be slightly lower, in particular the prevalence estimates of rarely used drugs such as heroin and hard-core drug use, as studies have demonstrated that alcohol and illicit drug use

in populations living in institutional settings and those with no permanent residence differed significantly from that of the household population (National Institute on Drug Abuse, 1993).

Appendix C

NHSDA Questionnaire Items Used

APPENDIX C: NHSDA Questionnaire Items Used

DEMOGRAPHIC CHARACTERISTICS

Recorded Sex

What is your date of birth?

SUBSTANCE USE

1. Cigarettes

How long has it been since you last smoked a cigarette?

Within the past 30 days
More than 30 days ago but within the past 12 months
More than 12 months ago but within the past 3 years
More than 3 years ago
I have never smoked a cigarette in my life

Think specifically about the past 30 days -- that is, from your 30-day reference data up to and including today. During the past 30 days, on how many days did you smoke a cigarette?

I smoked at least a puff or two from a cigarette on _____ day(s)
If None, mark one box for best answer:
I have smoked cigarettes but not during the past 30 days
I have never smoked a cigarette in my life

2. Alcohol

How long has it been since you last drank an alcoholic beverage?

Within the past 30 days

More than 30 days ago but within the past 12 months

More than 30 days ago but within the past 12 months

More than 12 months ago but within the past 3 years

More than 3 years ago

I have never drunk an alcoholic beverage in my life

During the past 30 days, on how many days did you have 5 or more drinks on the same occasion? By "occasion," we mean at the same time or within a couple of hours of each other.

During the past 12 months, when you drank alcoholic beverages, on how many days did you get very high or drunk?

More than 300 days (which would be every day or almost every day)

At least 201 but no more than 300 days (that is about 5 to 6 days a week)

At least 101 but no more than 200 days (or about 3 to 4 days a week)

At least 51 but no more than 100 days (1 to 2 days a week)

At least 25 but no more than 50 days (3 to 4 days a month)

At least 12 but no more than 24 days (1 to 2 days a month)

At t least 6 but no more than 11 days (less than 1 day a month)

At least 3 but no more than 5 days in the past 12 months

At least 1 but no more than 2 days in the past 12 months

You drank an alcoholic beverage in the past 12 months, but you never got very high or drunk

You have drunk alcoholic beverages, but not during the past 12 months

You have never drunk an alcoholic beverage in your life

3. Marijuana

How long has it been since you last used marijuana or hashish?

Within the past 30 days

More than 30 days ago but within the past 12 months

More than 12 months ago but within the past 3 years

More than 3 years ago

You have never used marijuana or hashish in your life

4. ***Cocaine***

Have you <u>ever</u>, even once, used any form of cocaine?

How long has it been since you last used any form of cocaine?

Within the past 30 days

More than 30 days ago but within the past 12 months

More than 12 months ago but within the past 3 years

More than 3 years ago

You have never used cocaine in your life

5. ***Crack***

Have you <u>ever</u>, even once, used "crack?"

How long has it been since you first used "crack?"

Within the past 30 days

More than 30 days ago but within the past 12 months

More than 12 months ago but within the past 3 years

More than 3 years ago

You have never used "crack" in your life

6. ***Heroin***

Have you ever, even once, used heroin?

7. ***Hallucinogens***

Please mark one box beside each hallucinogen to indicate whether you have ever used hallucinogen, even once?

LSD ("acid")
PCP ("angel dust," phencyclidine)
Peyote
Mescaline
Psilocybin ("mushrooms")
"Ecstasy" (MDMA)
Have you ever used a hallucinogen whose name you don't know?
Have you ever used any other hallucinogens besides the ones listed above?

How long has it been since you last used LSD, PCP, or any other hallucinogen?

Within the past 30 days
More than 30 days ago but within the past 12 months
More than 12 months ago but within the past 3 years
More than 3 years ago
You have never used any hallucinogen in your life

8. ***Inhalants***

Please mark one box beside each inhalant to indicate whether you have ever used any of the following kind of inhalant, even once, for kicks or to get high?

Amyl nitrite, "poppers," locker room odorizers, or "rush"

Correction fluid, degreaser, or cleaning fluid

Gasoline or lighter fluid

Glue, shoe polish, or toluene

Halothane, ether, or other anesthetics

Lacquer thinner or other paint solvents

Lighter gases (butane, propane)

Nitrous oxide or "whippets"

Spray paints?

Other aerosol sprays

Any inhalant whose name you don't know

Any other inhalants for kicks or to get high besides the ones listed above

How long has it been since you last used any inhalant for kicks or to get high?

Within the past 30 days

More than 30 days ago but within the past 12 months

More than 12 months ago but within the past 3 years

More than 3 years ago

You have never used any inhalant in your life

*9. **Psychotherapeutics***

As you read the following list of prescription **pain killers**, please mark one box beside <u>each</u> pain killer to indicate whether you have <u>ever</u> used that pain killer when it was <u>not</u> prescribed for you, or that you took only for the experience or feeling it caused. Again, we are interested in <u>all</u> kinds of prescription pain killers, in pill or non-pill form.

Codeine

Darvon

Demerol

Dilaudid

Methadone

Morphine

Percodan

Talwin

Tylenol with codeine

Have you ever used a pain killer whose name you don't know that was not prescribed for you, or that you took only for the experience or feeling it caused?

Have you ever used any other pain killer beside the ones listed above, that was not prescribed for you, or that you took only for the experience or feeling it caused?

As you read the following list of prescription **tranquilizers**, please mark one box beside each tranquilizer to indicate whether you have ever used that tranquilizer when it was not prescribed for you, or that you took only for the experience or feeling it caused. Again, we are interested in all kinds of prescription tranquilizers, in pill or non-pill form.

Atarax

Ativan

Diazepam

Librium

Tranxene

Valium

Xanax

Have you ever used a tranquilizer whose name you don't know that was not prescribed for you, or that you took only for the experience or feeling it caused?

Have you ever used any other tranquilizer besides the ones listed above, that was not prescribed for you, or that you took only for the experience or feeling it caused?

As you read the following list of prescription **stimulants**, please mark one box beside each stimulant to indicate whether you have ever used that when it was not prescribed for you, or that you took only for the experience or feeling caused. Again, we are interested in all kinds of prescription stimulants, in non-pill form.

Benzedrine

Biphetamine

Dexamyl

Dexerdrine

Fastin

Ionamin

Methamphetamine

Methedrine

Preludin

Have you ever used a stimulant whose name you don't know that was not prescribed for you, or that you took only for the experience or feeling it caused?

Have you ever used any other stimulant besides the ones listed above, that was not prescribed for you or that you took only for the experience for feeling it caused?

As you read the following list of prescription **sedatives**, please mark one box beside each sedative to indicate whether you have ever used that sedative when it was not prescribed for you, or that you took only for the experience or feeling it caused. Again, we are interested in all kinds of prescription sedatives, in pill or non-pill form.

Dalmane

Halcion

Methaqualone (including Sopor and Quaalude)

Nembutal

Phenobarbital

Placidyl

Seconal

Tuinal

Have you ever used a sedative whose name you don't know that was not prescribed for you, or that you took only for the experience or feeling it caused?

Have you ever used any other sedative besides the ones listed above, that was not prescribed for you, or that you took only for the experience/feeling it caused?

INJECTION DRUG USE

Have you ever, even once, used a needle to inject a drug that was not prescribed for you, or that you took only for the experience or feeling it caused?

PROBLEMS CAUSED BY DRUG USE (Beginning in 1995)

As you read the following list of types of drugs, please mark one box beside each type of drug to indicate whether...

1. You have used that type of drug during the past 12 months.

2. You had a period of a month or more during the past 12 months when you spent a great deal of time getting the drug, using the drug, or getting over its effects .

3. You have used that kind of drug much more often or in larger amounts than you intended to during the past 12 months.

4. You have built up a tolerance for the drug so that the same amount of the drug had less effect than before during the past 12 months.

5. Your use of that drug has often kept you from working, going to school, taking care of children, or engaging in recreational activities during the past 12 months.

6. Your use of the drug has caused you to have any emotional or psychological problems-- such as feeling uninterested in things, feeling depressed, feeling suspicions of people, feeling paranoid, or having strange ideas during the past 12 months.

7. Your use of that drug has caused you any health problems--such as liver disease, stomach disease, pancreatitis, feet tingling, numbness, memory problems, as accidental overdose, a persistent cough, a seizure or fit, hepatitis, or abscesses during the past 12 months.

8. During the past 12 months, you have wanted or tried to stop or cut down on your use of that drug but found that you couldn't.

   a. Cigarettes
   b. Alcohol
   c. Marijuana or hashish
   d. Cocaine (including "crack")
   e. Heroin
   f. Hallucinogens, such as LSD, "acid," PCP, "Ecstasy," psilocybin (mushrooms), mescaline, peyote
   g. Inhalants, such as amyl nitrite, "poppers," nitrous oxide, gasoline or lighter fluids glue, spray paints, correction fluids
   h. Pain killers, such as codeine, Tylenol with codeine, Darvon, Percodan, Demerol, methadone, opiates
   i. Tranquilizers, such as Valium, Xanax, Librium, Ativan, other antianxiety drugs
   j. Stimulants, such as the methamphetamine, "speed," Dexedrine, Biphetamine, Benzedrine, "uppers," other amphetamines

k. Sedatives, such as methaqualone, Seconal, Tuinal, Placidyl, barbiturates, sleeping pills,"downers"

PROBLEMS CAUSED BY DRUG USE (1994)

As you read the following list of types of drugs, please mark one box beside each type of drug to indicate whether

1. You have used that type of drug during the past 12 months

2. You had a period of a month or more during the past 12 months when you spent a great deal of time getting the drug, using the drug, or getting over its effects

3. You have used that kind of drug much more often or in larger amounts than you intended to during the past 12 months

4. You have built up a tolerance for the drug so that the same amount of the drug had less effect than before during the past 12 months

5. You have often been under the effects or after-effects of that kind of drug in situations where your physical safety was threatened (such as driving a car or motorcycle, using heavy machinery, or swimming) during the past 12 months.

6. Your use of the drug has caused you to have problems with your family or friends, problems at works, school, or with the police, or any emotional or psychological problems during the past 12 months.

As you read the following list of types of drugs, please mark one box beside each type of drug:

If you wanted to cut down or stop using that drug in the past 12 months,
If you did not want to cut down or stop using that drug, or
If you did not use that drug in the past 12 months, AND
Whether you were able to cut down on or stop your use of that drug every time you wanted to during the past 12 months.

TREATMENT

Have you ever received treatment or counseling for your use of alcohol or any drug, not counting cigarettes?

How many times in the past 12 months have you received treatment or counseling for use of alcohol or any drug, not counting cigarettes?

As you read the following list of places where treatment for drug use is offered, please mark one box beside each type of treatment place to indicate whether you have received treatment for your use of other drugs not counting cigarettes or alcohol in that type of facility during the past 12 months.

A hospital overnight as an inpatient
A residential drug or alcohol rehabilitation facility (overnight)
A drug or alcohol rehabilitation facility as an outpatient
A mental health center or facility as an outpatient
An emergency room
A private doctor's office
A prison or jail
A self-help group
I received treatment in some other place

How long has it been since you last received treatment or counseling for your alcohol or drug use, not counting cigarettes?

Within the past 30 days
More than 30 days ago but within the past 12 months
More than 12 months ago but within the past 3 years
More than 3 years ago

Where did you receive treatment the last time you were treated for your alcohol or other drug use, not counting cigarettes?

A hospital overnight as an inpatient
A residential drug or alcohol rehabilitation facility (overnight)
A drug or alcohol rehabilitation facility as an outpatient
A mental health center or facility as an outpatient
An emergency room
A private doctor's office
A prison or jail
A self-help group
I received treatment in some other place

As you read the following list of drugs, please mark one box beside each type of drug to indicate whether you received treatment or counseling for your use of that kind of drug the last time you received treatment.

Alcohol
Marijuana or hashish
Cocaine or "crack"
Heroin
Hallucinogens
Inhalants

Prescription painkillers or analgesics

Prescription tranquilizers

Prescription stimulants

Prescription sedatives

I received treatment for use of some other drug(s)

What was the primary drug you received treatment for during the last time you were treatment?

PSYCHOLOGICAL FUNCTIONING

Below is a list of items that describe young people. Think about whether each item describes you now or within the past 6 months. Please mark the box next to the "1" if the item is not true of you. Mark the box next to the "2" if the item is somewhat or sometimes true of you. If the item is very true or often true of you, mark the box next to the "3". Please mark only one box for each question.

Note: This answer sheet contains a list of questions about problems and experiences pertaining to youths. This scale was developed by Dr. Thomas Achenbach, and was used on the NHSDA with his permission. Due to copyright restrictions, the questions are not shown in this report.

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(Continued on next page)

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DHHS Publication No. (SMA) 99-3286
Substance Abuse and Mental Health Services Administration
Printed 1999

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